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Juneau Fish Habitat Assessment (Revised)

by

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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***Alaska Department of Fish and Game
Division of Sport Fish
Douglas, Alaska***

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JUNEAU FISH HABITAT ASSESSMENT



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Introduction

Many areas in Alaska have an abundance of excellent fish habitat, large runs of fish, low levels of use, and exceptional fisheries. In other areas, especially near large population centers, productive fish habitat has often been degraded or lost through development without adequate consideration of fish habitat needs.

Ironically, demand for fish and recreational angling opportunities is greatest in large communities, yet these are often the areas which have experienced the greatest loss and degradation of fish habitat.

The Juneau area—i.e., the area accessible by the Juneau road system—lacks large river systems that produce great numbers of fish. Instead, fish production is based on small systems, many of which have been severely impacted by adverse land uses. All systems are still vulnerable to impacts from future development.

Sport fishing effort in the Juneau area increased from about 92,000 angler-days in 1977 to nearly 144,000 in 1993. Given the area's increasing population, one can see the interest in recreational angling and the value of local fish habitat in providing fish to local fisheries.

The objectives of this document are (1) to inform interested parties of the life histories and habitat needs of fish species produced in local waters; (2) to provide descriptions of fish habitat in the

immediate Juneau area; and (3) to protect fish habitat remaining in the Juneau area by providing management recommendations for the area's streams.

Table 1 lists common names, scientific names, and abbreviations of all species discussed in this report.

A summary of Juneau area recreational effort and the harvest of fish from streams is presented in table 2 (following page). Please keep in mind that catch-and-release fishing is becoming more popular and there are additional fish caught which are not harvested. This publication includes the most recent data available at time of printing (June 1994). Harvest data include the most recent data available. All escapement data on streams are provided. Not all data were collected by the same methods for all species in all streams; consequently, in some streams there are more fish than these data show.

Species present in Juneau waters

Coho, pink, chum, and sockeye salmon; cutthroat, rainbow, and steelhead trout; Dolly Varden and eastern brook trout are produced naturally in Juneau area waters. Few, if any, of the Juneau area streams contain all of these species; however, some species are found in almost every one of the local streams.

Fish species can be classified as either anadromous or resident. Anadromous fish are those that are hatched in fresh water, eventually migrate to sea for some portion of their adult life, and return to fresh water to spawn. Resident fish are hatched in fresh water and live there throughout their entire lives. Some species, such as Dolly Varden and cutthroat trout, occur both in anadromous and resident populations.

Table 1. Common names, scientific names, and abbreviations for species of fish discussed in this report.

COMMON NAME (ABBREVIATION)	SCIENTIFIC NAME
Coho salmon (SS)	<i>Oncorhynchus kisutch</i>
Pink salmon (PS)	<i>Oncorhynchus gorbuscha</i>
Chum salmon (CS)	<i>Oncorhynchus keta</i>
Sockeye salmon (RS)	<i>Oncorhynchus nerka</i>
Cutthroat trout (CT)	<i>Oncorhynchus clarki</i>
Rainbow trout (RB)	<i>Oncorhynchus mykiss</i>
Steelhead trout (SH)*	<i>Oncorhynchus mykiss</i>
Dolly Varden (DV)	<i>Salvelinus malmo</i>
Eastern brook trout (BT)	<i>Salvelinus fontinalis</i>

* The term 'steelhead' is applied to sea-run rainbow trout.

Table 2. Summary of angler effort and harvest in the Juneau recreational fishery from 1980 to 1993 (totals include harvests from Turner, Florence, and Hasselborg Lakes).

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Angler days	90,095	77,362	93,842	108,173	108,012	122,781	121,055	114,756	108,860	115,360	122,045	113,913	149,382	133,789
King salmon (>28")	6,518	5,670	6,697	4,629	7,640	9,044	6,244	8,430	6,259	8,751	14,442	15,444	11,841	13,098
King salmon (<28")	0	1,231	2,472	168	111	407	315	313	410	624	—	1,470	45	20
Silver salmon	12,562	9,234	22,898	17,162	14,067	17,242	11,741	17,254	19,207	39,063	44,878	40,269	40,170	30,428
Red salmon	206	75	251	558	611	809	179	321	436	1,461	1,669	1,017	985	2,530
Pink salmon	7,388	8,877	19,168	17,236	7,835	26,248	8,089	22,923	17,099	22,488	54,962	14,998	21,411	9,216
Chum salmon	904	573	555	1,143	1,212	2,151	1,207	2,208	3,856	3,260	6,921	2,741	3,147	3,453
Dolly Varden	7,198	3,198	4,957	9,514	6,902	10,857	9,350	6,348	14,806	13,987	33,283	11,929	7,201	7,923
Steelhead	68	11	41	209	8	111	206	250	265	280	463	400	258	258
Rainbow trout	129	87	105	209	245	330	213	298	491	229	464	46	372	167
Cutthroat	2,358	1,976	2,819	2,055	1,515	4,145	2,715	2,787	4,202	3,057	9,689	1,774	2,564	5,516
Brook trout	491	605	734	493	534	87	290	298	436	169	327	114	292	182

In general, anadromous species can be categorized as either rearing or non-rearing, depending on the length of time they remain in fresh water after they hatch. Rearing species, such as coho salmon and steelhead trout, spend 1 to 3 years in fresh water before they emigrate to the ocean. Streams containing these species are often referred to as "rearing" streams. Non-rearing species, like pink and chum salmon, emigrate to sea almost immediately upon emerging from the gravel. Because non-rearing species use the streams primarily for spawning, these streams are often referred to as being primarily "spawning" streams.

Typically, rearing streams have a low gradient, slower moving water, numerous pools, overhanging banks, and overhead and instream cover. Large organic debris (logs, limbs, etc.) form most of the instream cover which is critical to the production of rearing fish. A typical spawning stream is characterized by a higher gradient, fast water, few pools, few overhanging banks, and little overhead and instream cover.

Brief life histories of the important recreational species produced in Juneau area streams are presented below. The freshwater life histories of species of fish that rear in the Juneau area streams are summarized in table 3.

Each chapter in this document addresses a specific stream or lake accessed

by the Juneau road system. Chapters are arranged alphabetically by stream or lake name. Each contains a map of the system and a discussion of what is known about the system—its location, anadromous stream catalog number, general description, fish species present, fish habitat, public use, land ownership, land uses, conclusions, and recommendations.

Coho Salmon

Coho salmon enter their spawning systems from August through October, usually during periods of high water (table 3). The adults hold in pools, ponds, or lakes for several weeks until they are mature, then move into shallow riffles with clean gravel to spawn. The female digs a depression into the gravel by turning on her side and using rapid body and tail motions. She protects her nest area, called a redd, and males frequently combat each other for occupancy of this area. Several redds may be dug and the spawning acts continue until the female has deposited her eggs—usually between 2,400 and 4,500.

The eggs develop slowly during the cold winter months and hatch in early spring. The embryos remain in the gravel and utilize their egg yolk material until they emerge in May or June. The young fry school in shallow areas along the stream shoreline, but soon establish individual territories which they defend from other juvenile coho with aggressive dis-

plays. This territory is usually along the shoreline or behind a log or boulder where the young fish does not have to fight the current, but can dart out to feed on adult surface insects or drifting insect larvae—its principal source of food.

The juveniles grow rapidly during the summer months and find deeper pool areas or spring-fed side ponds to spend the winter. They will spend from one to three winters in fresh water before migrating to sea in the early spring as "smolts."

Pink Salmon

Adult pink salmon enter local spawning streams between late June and mid-August (table 3). Different races or runs with differing spawning times frequently occur in adjacent streams or even within the same stream. Most pink salmon spawn in lower sections of streams, commonly within the intertidal zone at the stream mouth. Favored spawning areas are in shallow riffles, where flowing water breaks over coarse gravel or cobble-size rock, and in downstream ends of pools.

The average female pink salmon carries 1,500 to 2,000 eggs, depending on her size. She digs a redd with her tail and releases the eggs in the redd. They are immediately fertilized by one or more males and then covered by further digging action by the female. The process is repeated several times until all the

Table 3. Timing of freshwater phases of life histories of recreational fish species produced in Juneau area waters.

Phase	SS	SH-RT	RS	PS	DV	CS	CT
Adult return	Aug-Sept	Apr-May	Jun-Aug	Jul-Aug	Jul-Sept	June-Aug	Aug-Oct
Spawning	Oct-Nov	May-Jun	Aug-Sept	Jul-Aug	Oct-Nov	Jul-Aug	May-Jun
Eggs incubating-fry emergence	Nov-Apr	Jul-Aug	Sept-Mar	Aug-Mar	Nov-Apr	Aug-Apr	Jul-Aug
Length of juvenile rearing in fresh water	1 - 3 yrs	2 - 4 yrs	2 - 3 yrs	none	3 - 4 yrs	none	2 - 4 yrs
Juvenile outmigration	May-Jun	May-Jun	May-Jun	Apr-May	Apr-May	Apr-May	May-Jun
Adult outmigration	none	May-Jun	none	none	Apr-May	none	May-Jun
Adult overwintering	none	none	none	none	Oct-May	none	Oct-Jun
SS = silver salmon SH = steelhead trout RT = rainbow trout CT = cutthroat trout RS = red salmon PS = pink salmon DV = Dolly Varden CS = chum salmon BT = brook trout							

female's eggs have been released. As with all species of salmon, both male and female die after spawning.

During the fall and winter, the eggs hatch into "alevins," or fry, with yolk sacs attached. The fry feed on their yolk material and emerge in late winter or early spring, as the yolk material is depleted. The fry swim up out of the gravel and emigrate downstream to salt water. The emergence and outmigration of fry is heaviest during hours of darkness and usually lasts for several weeks. Pink salmon fry do not rear in fresh water. Newly emigrant pink salmon fry are commonly observed in large numbers in local estuaries and coves where tidal currents are not too strong.

Pink salmon almost invariably mature in 2 years, which means that odd-year and even-year populations are essentially unrelated. One cycle or the other (odd-year or even-year) will predominate in most systems although both odd- and even-year pink salmon are about equally abundant in other streams.

Chum Salmon

Two types of chum salmon (based on run timing) are found in Juneau area streams: summer-run and fall-run. Summer chum salmon enter fresh water in July and early August and spawn by the end of September (table 3). Fall chum

salmon enter freshwater streams from September through November and spawn from October through December.

Although chum salmon often spawn in more upstream sections of streams compared to pink salmon, chums also spawn in the same areas as pink salmon, including intertidal areas. Female chum salmon construct redds in the same manner as other Pacific salmon and deposit up to 2,700 eggs each. Chum salmon fry generally emerge from the gravel during March and April, then migrate to salt water. Chum salmon fry tend to stay in the intertidal estuaries a bit longer than pink salmon fry.

Sockeye Salmon

In June and July, adult sockeye migrate from salt water back to the freshwater systems where they originated (table 3). The system normally has a lake which the adults pass through to spawn in its headwater tributaries. However, some spawning may occur in the lake outlet and along the lake shore (beach spawners). While at sea, sockeye are bright and silvery. In fresh water, the adults acquire a characteristic bright red body and green head. The complete maturation process requires 1 to 2 months, and by late August most sockeye have spawned.

Upon maturing, the female digs a redd and deposits her eggs in the downstream

portion of the redd, where they are fertilized by one or more males. During spawning, the female continues to enlarge the redd upstream, covering eggs previously deposited.

During fall and winter, the eggs incubate, hatch, and the young fry move into lakes in early spring. Juvenile sockeye spend 2 or 3 years in the lake before migrating to sea in the spring as smolt. The migration of smolt to salt water is usually over by the end of June.

After 2 to 4 years in the ocean, mature sockeye have usually attained weights varying from 4 to 8 pounds, but weights up to 15.5 pounds have been recorded. In Alaska, it is usually in their fourth, fifth, or sixth year of life that adult sockeye return to fresh water to spawn. Some males mature after spending only 1 year in salt water and return as "jacks."

Cutthroat Trout

Adult cutthroat trout normally overwinter in freshwater lakes. Mature cutthroat trout either move into small tributaries of the system they overwintered in for spawning, or migrate out of the overwintering area and back to their parent stream for spawning.

Spawning normally occurs from May through early July, often in the headwaters of very small streams (table 3). Anadromous cutthroat trout rear for 2 to

4 years in fresh water before emigrating to salt water. Some systems have populations of resident cutthroat trout that do not emigrate to salt water. Cutthroat trout generally prefer slow-moving streams, beaver ponds, and lakes for rearing, rather than high-gradient, fast-flowing streams.

Rainbow Trout

Maturing rainbow trout seek out shallow gravel riffles of suitable clearwater streams when water temperatures are on the rise during the spring to spawn. The sexually mature female rainbow are usually at least 3 years of age, although males may mature earlier. Only a small percentage of resident rainbow survive to spawn more than three times.

The female prepares the nest or redd. The fertilized eggs are covered by the female as she enlarges the nest in an upstream direction. From 200 to 800 eggs may finally be deposited, depending upon the size of the female.

Hatching normally takes place from a few weeks to as much as 4 months after spawning, depending upon the water temperature. A few more weeks may be required for the tiny fry to emerge from the streambed. The length of the fry upon their emergence ranges from 0.5 inch to 1 inch.

The small trout seek shelter along the stream margins or protected lakeshore, feeding vigorously on crustaceans, plant material, and aquatic insects and larvae. At the end of their first season, their total length is usually 2.5 inches or more, depending upon the productivity of their environment. Rainbow trout are carnivorous, and as the young trout grow larger, small fish are added to their diet.

Steelhead Trout

Most steelhead enters spawning streams from mid-April through mid-May (table 3). Adults sometimes enter their natal streams in a mature spawning condition, some may remain for several days in deep pools or secluded areas prior to spawning. A female may dig several redds during spawning and will deposit a total of 2,000–4,000 eggs, which are fertilized by an accompanying male.

Steelhead, unlike salmon, do not necessarily die after spawning; however, many do because of bruising and infections incurred in freshwater. After spawning, steelhead move from spawning riffles into deep pools for several days prior to returning to saltwater.

The eggs incubate and develop in the gravel for 2 to 3 months. Young fry emerge from the gravel in late summer and seek out calm water with good protective cover. Juvenile steelhead will rear in fresh water for 2, 3, or 4 years before emigrating to the ocean. Steelhead normally rear in salt water for 2 or 3 years before returning to their parent stream to spawn. Repeat spawners may constitute up to 35% of the total return to the stream.

Dolly Varden

Dolly Varden usually spawn in streams during October and November (table 3). The female, depending on her size, may deposit 600–6,000 eggs. The male usually takes no part in nest-building activities and spends most of his time fighting and chasing other males. When the female is ready to deposit her eggs, the male moves to her side and spawning begins.

The eggs develop slowly in the cold water. Hatching occurs in March, 4 to 5 months after fertilization. After hatching, the young Dolly Varden obtain food from their yolk sac and usually stay in the gravel until this food source is gone. Emergence typically occurs in April or May. The young Dolly Varden rear in streams or lakes for 3 or 4 years before beginning their life in fresh water. During this period their growth is slow, a fact which may be attributed to their habitat.

Young Dolly Varden char often remain on the bottom, hidden from view under stones and logs or in undercut areas along the stream bank. These habitats are different from those of the more aggressive juvenile coho salmon. Coho young are usually seen swimming and feeding near the water surface, whereas young Dolly Varden seldom swim and appear to select most of their food from the stream bottom.

Dolly Varden migrate to sea in their third or fourth year when they are about 5 inches long. Migration usually occurs in May or June, although smaller numbers have been recorded migrating to sea in September and October. Once at sea, they begin a fascinating pattern of migration.

After their first seaward migration, Dolly Varden usually spend the rest of their life wintering in and migrating to and from lakes. Those hatched and reared in a lake system carry on annual feeding migrations to sea, returning to the lake each year to overwinter. However, Dolly Varden originating from non-lake systems must seek a lake in which to winter. Recent research indicates that they find lakes by random searching, migrating from one stream system to another until they find one with a lake. Once a lake is found, these fish may continue to conduct annual seaward migrations in the spring, sometimes entering other stream systems in search of food.

Some streams have populations of resident Dolly Varden that do not emigrate to the ocean, but spend their entire lives in the streams in which they were hatched. Resident Dolly Varden attain lengths of 4 to 8 inches when mature.

At maturity, Dolly Varden return to spawn in the stream from which they originated. They possess an ability to find their "home" stream without randomly searching, as was the case in their original search for a lake. Those that survive the rigors of spawning return to the lake shortly thereafter for overwintering.

Most Dolly Varden reach sexual maturity at 5 or 6 years of age. At this age, they may be 12–16 inches long and may weigh from 0.5 to 1 pound. Mortality after spawning varies, depending on the sex and age of the Dolly Varden. Males suffer a much higher mortality rate, partly due to fighting and the subsequent damage inflicted to each other. It is doubtful that many more than 50% of Dolly Varden live to spawn a second time, although a small number do live to spawn more than twice, and a few live longer than 8 years.

Eastern Brook Trout

Eastern brook trout are available only in Salmon Creek Reservoir and certain streams in the Juneau area where they were stocked. Their life history is similar to that of resident Dolly Varden.

Fish in Gold Creek appear to exhibit physical characteristics of both Dolly Varden and brook trout.

Stream Types

The type of habitat found in a stream dictates what species of fish use the stream. (All fish require good spawning habitat; however, the non-rearing species do not require rearing habitat, as do species requiring several years of rearing in fresh water.)

Some streams have both spawning and rearing habitat and have good populations of fish species that require freshwater rearing and species that outmigrate directly after emerging from the gravel. Montana Creek is a good example of such a stream.

Fish Creek, a stream of similar size has excellent spawning habitat; however, it lacks slow water areas, woody debris, and the cover needed by rearing species of fish. Consequently, Fish Creek can be

expected to produce large numbers of pink and chum salmon (non-rearing species), but it will never produce more than a few coho salmon, which require extended freshwater rearing.

A list of the streams included in this document, including species of fish and habitat present, is presented in table 4 (following page).

Developmental Impacts

Nearly all streams in the Juneau area have been impacted to some degree by adverse land uses in the past. Some streams have been impacted by only a single road crossing; however, others have been subjected to a multitude of adverse land uses that have diminished their productive capability.

Historically, the habitat values of streams subject to development were not given the level of recognition that they have received in more recent times. Public awareness of environmental quality has led to a more thorough review of land use permit applications, which has been increasingly successful in protecting or mitigating habitat values of streams subject to development.

Considering the projected long-term increases in local population and the

shortage of real estate available for development, critical review of land use permit applications will be necessary to adequately protect stream habitat values.

It should be noted that land use activities do not necessarily have to impact fish habitat values. In most instances, maintenance or improvement of stream-side habitat and fishery values will add to the ultimate value of the proposed development. With proper timing, construction techniques, location of development, and mitigation in some instances, development can occur without adversely impacting fish habitat.

Development of new industry also may or may not directly impact fish and wildlife resources and fishing and hunting opportunities in an area. However, it is often the number of users that affect fish and wildlife populations, and any activity which attracts additional population to an area will indirectly impact fish and wildlife habitat as well as fishing and hunting opportunities, by creating more resource users for a given amount of resource. A list of local streams and land use activities which have impacted the streams and to which streams would be vulnerable in the future is presented in table 5 on pages 8-9. ■

Table 4. List of streams, including species present and habitat type and quality.

STREAM	FISH SPECIES PRESENT										HABITAT TYPE AND QUALITY				FISH BARRIER Location
	SS	PS	CS	RS	DV	CT	SH	RB	BT	ANADROMOUS FISH		RESIDENT FISH			
										Spawning	Rearing	Spawning	Rearing		
1 Auke Creek 111-50-10420	X	X	X	X	X	X		X			good	good	good	good	none
2 Auke Lake 111-50-10420-0010	X	X	X	X	X	X		X			good	good	good	good	none
3 Auke Nu Creek 111-50-10350		X			X						good	fair	fair	fair	1/4 mile
4 Bay Creek 111-50-10390	X	X			X						good	good	good	good	none
5 Bear Creek 111-50-10850		X									poor	none	fair	fair	tidewater
6 Bessie Creek 114-10-10250		X			X	X					fair	poor	good	good	1/4 mile
7 Bessie Lake					X	X					none	none	fair	exc	--
8 Bridget Cove Creek 115-10-10230	X	X	X		X	X					good	good	good	good	--
9 Campground Lake	X				X	X					none	exc	none	exc	none
* 10 Pederson Hill Creek 111-50-10490-2013	X	X			X	X					good	exc	good	exc	west fork above road
11 Cove Creek	--	--	--	--	--	--	--	--	--		none	none	--	--	tidewater
12 Cowee-Davies Creek 115-20-10620 & 2003	X	X	X		X	X	X	X			exc	good	exc	good	none
13 Cropley Lake					X						none	none	poor	poor	on outlet
14 Crossbay Creek	--	--	--	--	--	--	--	--	--		--	--	none	none	tidewater
15 Duck Creek 111-50-105-2002	X	X	X		X	X					fair	fair	fair	fair	none
16 Eagle Creek 111-40-10920	X	X			X						fair	poor	good	exc	1/8 mile
17 Eagle River 111-50-10070	X	X	X		X	X					exc	good	exc	good	none
18 East Creek 111-40-10960	X	X			X						fair	poor	fair	poor	none
19 Elevenmile Creek	--	--	--	--	--	--	--	--	--		none	none	--	--	tidewater
20 Falls Creek 111-40-10940					X	X					fair	fair	fair	poor	possibly 300 yards up
21 Fish Creek 111-50-10690	X	X	X		X	X					exc	fair	exc	fair	3 miles
22 Float Plane Lake	X	X	X		X	X					none	good	none	good	none
23 Gold Creek					X				?		poor	none	fair	fair	tidewater
24 Grant Creek 111-40-10910					X						fair	poor	fair	poor	5/8 mile
25 Hendricksen Creek 111-50-10980	X	X	X		X	X					good	exc	fair	exc	none
26 Herbert River 111-50-10070-2004	X	X	X	X	X	X	X	X			good	good	good	good	none
27 Johnson Creek 111-50-10660	X	X	X		X	X	X				exc	exc	good	exc	none
28 Jordan Creek 111-50-10620	X	X			X	X					exc	exc	exc	exc	none
29 Kowee Creek 111-40-10900		X	X		X						good	poor	good	poor	head of tidewater
30 Lake Creek 111-50-10420-2010	X	X	X	X	X	X		X			exc	fair	exc	fair	none
31 Lake Two Creek 111-50-10420	X	X	X	X	X	X		X			exc	exc	exc	exc	none
32 Lawson Creek 111-40-10890	X	X	X		X	X					good	poor	good	poor	1/2 mile
33 Lena Creek 111-50-10300	X	X			X	X					fair	poor	fair	poor	250 yards
34 Lemon Creek 111-40-10100	X	X	X		X						good	poor	good	fair	none

Table 4. (continued)

STREAM	FISH SPECIES PRESENT									HABITAT TYPE AND QUALITY				FISH BARRIER
	SS	PS	CS	RS	DV	CT	SH	RB	BT	ANADROMOUS FISH		RESIDENT FISH		
										Spawning	Rearing	Spawning	Rearing	
Location														
35 Little Sheep Creek		X			X					fair	poor	fair	poor	300 yards
36 Marshall Pond/ Mitchell Pond	--	--	--	--	--	--	--	--	--	none	none	none	good	none
37 McGinnis Creek 111-50-10500-2003-3006	X	X	X		X	X	X			good	good	good	good	none
38 Mendenhall Lake 111-50-10500-0020	X	X	X	X	X	X	X	X		good	fair	good	fair	none
39 Mendenhall Ponds	X	X		X	X	X				fair	exc	fair	exc	none
40 Mendenhall River 111-50-10500	X	X	X	X	X	X	X	X		good	fair	good	fair	none
41 Montana Creek 111-50-10500-2003	X	X	X	X	X	X	X	X		exc	exc	exc	exc	none
42 Neilson Creek 111-40-10960	X	X			X					poor	poor	poor	poor	300 yards
43 Nine Mile Creek 111-50-10670	X		X		X	X				fair	exc	good	exc	none
44 North Tee Creek 111-50-10200	X	X	X		X	X				good	exc	good	good	none
45 Nugget Creek 111-50-10500-0020-2010					X					none	none	poor	poor	mouth
46 Peterson (25 mile) Creek 111-50-10100	X	X	X		X	X	X	X		exc	exc	exc	exc	1-1/2 mile
47 Peterson (O.P.) Creek 111-50-10750	X	X	X		X	X				exc	exc	exc	exc	none
48 Peterson Lake					X			X		good	fair	good	fair	none
49 Picnic Creek 111-50-10310	X	X	X		X	X				exc	exc	exc	exc	highway culverts
50 Riverside Drive Pond	X									none	poor	none	poor	none
51 Salmon Creek 111-40-10150	X	X	X		X				X	exc	poor	good	good	1/4 mile
52 Salmon Creek Reservoir									X	none	none	poor	good	none
53 Sheep Creek 111-40-10280	X	X	X		X					good	poor	good	good	1/8 mile
54 Shrine Creek	X	X			X	X				exc	exc	exc	exc	none
55 Snowslide Creek	--	--	--	--	--	--	--	--	--	--	none	none	none	mouth
56 Steep Creek 111-50-10500-2006	X	X	X	X	X					exc	good	good	fair	500 yards
57 Strawberry Creek 111-50-1007-2004-3002	X	X			X	X				good	exc	exc	exc	none
58 Switzer Creek 111-40-10070	X	X	X		X	X				exc	exc	exc	exc	none
59 Tee Creek	--	--	--	--	--	--	--	--	--	none	none	--	--	mouth
60 Twin Lakes	X				X	X				none	none	poor	exc	tidewater
61 Vanderbilt Creek 111-40-10125	X	X	X		X	X				good	good	good	good	none
62 Wadleigh Creek 111-50-10370		X	X		X					good	poor	good	good	tidewater
63 West Creek 111-40-10050	X	X			X					fair	poor	poor	poor	none
64 Windfall Lake 111-50-10070-2004-3006-0016	X	X	X	X	X	X	X	X		exc	exc	exc	exc	none

* Pederson Hill Creek was listed as Casa del Sol Creek in the 1993 habitat assessment.

SS silver salmon
CT cutthroat trout

PS pink salmon
SH steelhead

CS chum salmon
RB rainbow trout

RS red salmon
BT brook trout

DV Dolly Varden

X indicates species present in stream
-- unknown

Table 5. List of streams, including present and future potential impacts to fish habitat.

Stream/Lake ASC Number	PRESENT LAND USE IMPACTS										FUTURE POTENTIAL LAND USE IMPACTS									
	WW	GR	RC	FF	MN	LG	UD	ID	CP	WW	GR	RC	FF	MN	LG	UD	ID	CP		
1 Auke Creek 111-50-10	X		X		X		X	X	X	X		X		X		X	X	X		
2 Auke Lake 111-50-10420-0010	X		X	X	X		X	X	X	X		X		X		X	X	X		
3 Auke Nu Creek 111-50-10350			X		X					X		X		X		X	X			
4 Bay Creek 111-50-10390	X		X	X			X	X		X						X	X	X		
5 Bear Creek 111-50-10850	X		X	X			X	X		X		X	X			X	X	X		
6 Bessie Creek			X									X		X	X			o		
7 Bessie Lake												X		X	X			o		
8 Bridget Cove Creek			X									X		X	X			X		
9 Campground Lake	X		X							X		X						X		
10 Casa Del Sol Creek			X	X			X	X	X	X		X	X			X	X	X		
11 Cove Creek 115-20-10620			X																	
12 Cowee-Davis Creeks 115-20-10620-2003	X		X			X				X		X		X	X			X		
13 Cropley Lake	X							X		X							X			
14 Crossbay Creek			X									X								
15 Duck Creek 111-50-060	X	X	X	X		X	X	X	X	X		X	X			X	X	X		
16 Eagle Creek 111-40-10920	X		X	X			X			X		X	X			X		X		
17 Eagle River 111-50-10070		X	X		X						X	X		X	X			X		
18 East Creek 111-40-10940	X		X	X			X		X	X		X				X	X	X		
19 Eleven Mile Creek			X									X								
20 Falls Creek 111-40-10940			X									X								
21 Fish Creek 111-50-10690	X	X	X	X						X		X	X			X	X			
22 Float Plane Lake 111-50-10690		X	X					X	X		X	X	X				X	X		
23 Gold Creek	X	X	X	X	X		X	X	X	X		X	X	X		X	X	X		
24 Grant Creek 111-40-10910	X		X				X			X		X				X		X		
25 Hendricksen Creek 111-50-10980	X		X							X		X				X				
26 Herbert River 111-50-10070-2004		X	X								X	X		X			X	X		
27 Johnson Creek 111-50-10660	X		X									X				X				
28 Jordan Creek 111-50-10620	X	X	X	X			X	X	X	X	X	X	X			X	X	X		
29 Kowee Creek 111-40-10900	X		X	X			X	X		X		X	X			X	X	X		
30 Lake Creek 111-50-10420-2010		X	X		X		X			X		X		X		X		X		
31 Lake Two Creek 111-50-10420	X		X				X			X		X				X		X		
32 Lawson Creek 111-40-10890	X		X	X	X		X			X		X	X			X		X		
33 Lena Creek 111-50-10300	X		X				X			X		X								

Chapter 1

Auke Creek (also refer to Auke Lake)

Anadromous Stream Catalog Number:
111-50-10420

Location: Lat. 58°22'51" N.
Long. 134°38'25" W.
(11.5 mile Glacier Highway)

Description

Auke Creek flows about 0.3 miles from Auke Lake to salt water in Auke Bay (figure 1.1). The stream has a fairly steep gradient, and the water is clear with a brown tint. A small fish hatchery was built on the stream in 1954 by the Territorial Sportsmen Club.

Since 1961, a weir has been in place on Auke Creek. The weir and hatchery are both operated by the National Marine Fisheries Service. Wild fish stocks utilizing Auke Lake are counted at the Auke Creek weir, and only Auke Creek stocks of fish are reared in Auke Creek Hatchery.

Fish Species Present

Auke Creek has populations of coho, pink, chum, and sockeye salmon, cutthroat and rainbow trout, and Dolly Varden. Data on fish runs for this system appear in tables 1.1 and 1.2.

A history of stocking in the Auke Creek/Auke Lake system is presented in table 1.3. Data on the contribution of Auke Lake coho salmon to fisheries in northern Southeast Alaska are presented in tables 1.4 and 1.5.

Fish Habitat

Auke Creek is used primarily as a migration route to Auke Lake; however, the stream does provide good rearing and spawning habitat. The stream has many pools with heavy overhead vegetation,

which provides good cover. The upper section of the stream has been enhanced through channel stabilization and placement of high quality spawning gravel. This section of the stream is also an excellent rearing area.

Trap data collected at Auke Creek are summarized as follows (July 16, 1970): 7 minnow traps averaged 64 rearing coho and one Dolly Varden per trap.

King salmon smolts are imprinted at the mouth of Auke Creek annually, and adult fish provide a popular shore-based

fishery during summer. King salmon escaping the fisheries are captured at the Auke Creek weir and given to charitable organizations.

There are no natural barriers to fish passage on Auke Creek.

Public Use

Auke Creek is closed to sport fishing; however, a major roadside sport fishery occurs in Auke Bay at the mouth of Auke Creek. This fishery is supported by wild fish stocks destined for the Auke Lake system and production from the Auke Creek Hatchery.

Since 1986, king salmon smolts from Snettisham Hatchery have been imprinted and released at the mouth of Auke Creek. The mouth of Auke Creek has proven to be an excellent release site, as the smolts survive well and contribute to both marine and shore-based fisheries.

A record of recreational angling effort and harvest at the mouth of Auke Creek is presented in table 1.6.

Land Ownership

Auke Creek runs through state property, except for a small parcel of private property adjacent to the stream mouth.

Table 1.1 Summary of Dolly Varden and cutthroat trout emigrants from Auke Lake.

YEAR	OUTMIGRANTS	
	NO. OF DOLLY VARDEN	NO. OF CUTTHROAT TROUT
1970	6,126	—
1980	3,057	85
1981	6,366	157
1982	3,789	157
1983	3,717	226
1984	4,512	302
1985	3,052	161
1986	4,358	138
1987	6,443	942
1988	6,770	690
1989	7,230	411
1990	6,425	506
1991	5,579	260
1992	6,839	226
1993	5,074	190
1994	7,600	431

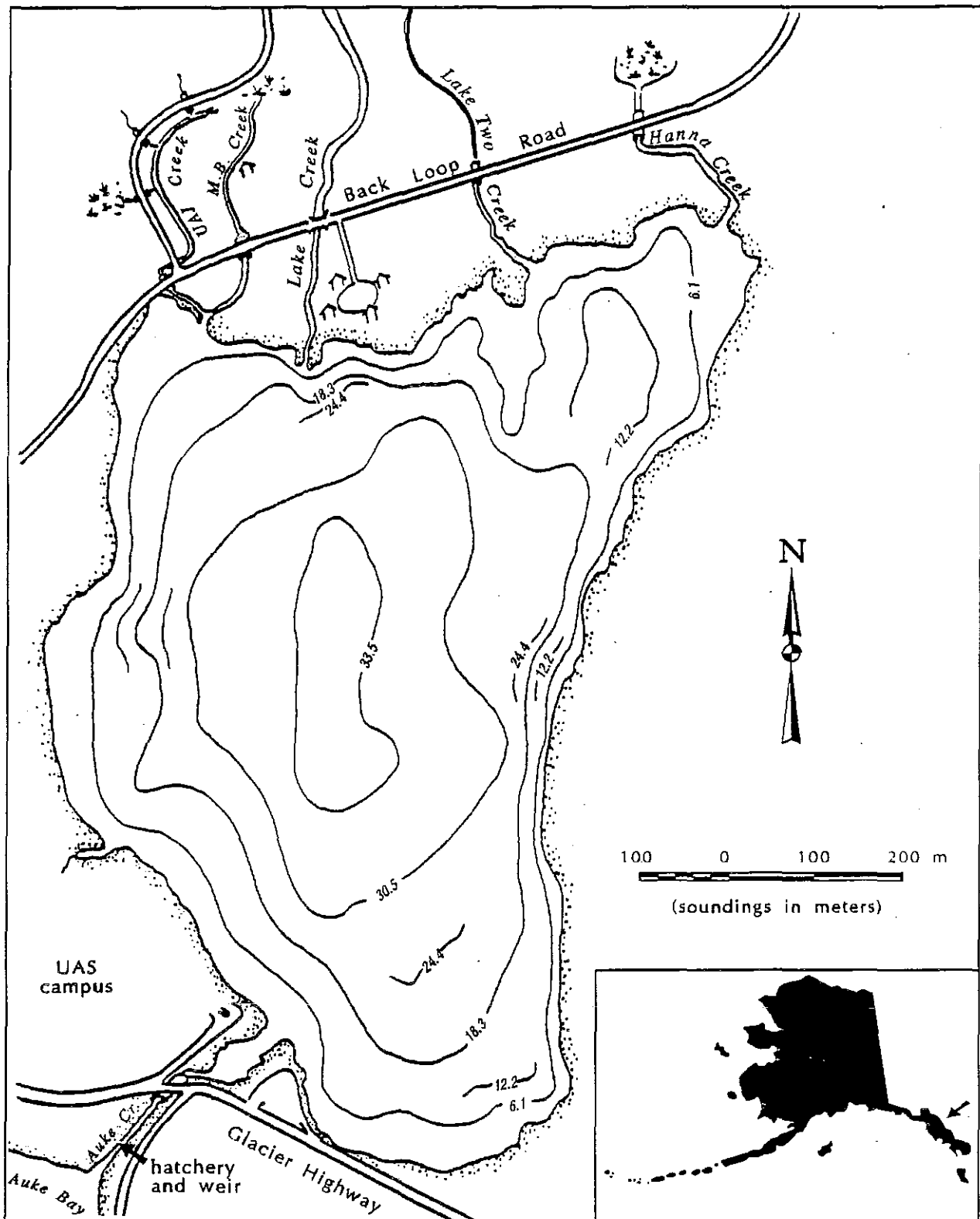


Figure 1.1 Auke Lake and Auke Creek.

Table 1.2 A summary of Auke Lake salmon migrations. Tag recovery information on Auke Lake coho salmon are presented in Tables 1.3, 1.4, and 1.5.

YEAR	PINK SALMON		COHO SALMON		SOCKEYE SALMON		CHUM SALMON		KING SALMON Adults
	Juv.*	Adult	Juv.*	Adult	Juv.*	Adult	Juv.*	Adult	
1961	—	—	—	—	90,000	—	—	—	—
1962	—	—	—	—	—	—	—	—	—
1963	—	—	—	—	29,052	6,391	—	—	—
1964	—	—	—	—	62,389	5,465	—	—	—
1965	—	—	—	—	—	6,889	—	—	—
1966	—	—	—	—	—	10,986	—	—	—
1967	—	3,761	—	390	—	5,909	—	78	—
1968	—	2,638	—	—	35,737	7,164	—	—	—
1969	—	—	—	—	24,947	6,131	—	—	—
1970	—	—	—	—	—	7,034	—	—	—
1971	—	2,090	—	916	—	7,673	—	10	—
1972	157,000	1,768	—	1,113	3,388	9,166	—	47	—
1973	74,100	4,948	—	637	—	8,259	—	27	—
1975	268,000	6,260	—	1,147	15,399	4,371	—	5	—
1976	107,595	2,525	—	460	51,972	6,153	—	16	—
1977	119,000	15,848	—	1,781	9,327	16,683	—	17	—
1978	129,194	18,410	—	699 **	7,855	3,177	—	17	—
1979	23,270	19,003	—	596 **	—	6,022	—	13	—
1980	74,047	20,187	9,951	644 **	25,299	4,564	0	118	—
1981	111,416	14,450	7,140	678 **	9,183	4,089	0	109	—
1982	118,399	10,653	6,607	458 **	1,719	1,334	0	251	—
1983	164,784	24,827	6,721	694 **	3,170	1,805	0	310	—
1984	169,552	5,271	7,036	651 **	20,251	975	0	1,927	—
1985	110,001	26,317	5,601	942 **	11,747	240	7,198	1,852	—
1986	123,887	2,305	5,666	550 **	14,503	952	823	1,392	—
1987	43,502	7,944	7,181	662 **	17,598	2,829	14,039	1,883	—
1988	113,061	8,140	7,888	756 **	19,157	1,337	8,091	1,093	—
1989	116,870	5,016	6,924	502	29,175	2,508	—	—	—
1990	98,355	21,806	5,132	697	28,343	3,383	1,916	270	349
1991	243,037	6,857	5,722	804	25,987	5,408	759	167	202
1992	100,613	22,101	6,271	1,020	13,248	4,853	4,783	130	210
1993	237,616	1,696	8,103	859	33,616	9,113	47	121	272
1994	11,600	22,548	7,416	1,447	32,009	6,993	137	868	316

* Juveniles

** Since 1978, counts include only adult coho and do not include "jacks"

Public access is available along the beach and via the fish hatchery driveway.

Land Uses

Auke Creek has basically recovered from the impacts of the construction of Glacier Highway and Fritz Cove Road.

Auke Lake is vulnerable to many land uses that could occur in the upper watershed. Water rights on file for the Auke Creek drainage include one permit for domestic use of lake water (500 gpd). Major threats could come from residential development and associated activities in the lakes headwaters. High coliform counts have been documented in water samples collected from Lake Two Creek.

Conclusion

Auke Creek is a small but very productive stream. It provides a tremendous opportunity for fisheries research because of the hatchery and weir located on the stream. The weir makes possible the evaluation of enhancement efforts that is not possible on any other local stream.

Recommended Management

Fish production should be designated as the top priority use of the Auke Creek/Auke Lake system. Habitat values of this system should be given the maximum level of protection.

Protection of water quality is crucial for fisheries research and for enhancement activities in the hatchery and maintenance of wild fish stocks in Auke Creek.

The City and Borough of Juneau should complete the sewer system as soon as possible, to serve residences from Goat Hill to the University of Alaska campus septic system drainfield. Failure in this area is common because of the very high groundwater table. ■

Table 1.3. A history of fish stocking in Auke Lake.

DATE	SPECIES	NUMBER	BROOD SOURCE	HATCHERY
1919	pink salmon	600,000	?	?
08/27/25	cutthroat trout	9,600	Lake Eva, WA	Lake Eva, WA
09/20/27	eastern brook	4,780	?	Yes Bay, AK
10/25/27	eastern brook	7,030		Yes Bay, AK
1928	eastern brook	14,400	?	?
09/15/31	eastern brook	1,050		Yes Bay, AK
1950	grayling	125	McDonald Lk, BC	
08/13/54	rainbow trout	61,000	Kodiak, AK	Auke Cr, AK
08/18/56	rainbow trout	42,000	Kodiak, AK	Auke Cr, AK
05/22/74	sockeye salmon	40,000	Auke Lk, AK	Auke Cr, AK
05/22/74	sockeye salmon	20,000	Auke Lk, AK	Auke Cr, AK
06/06/75	sockeye salmon	54,000	Auke Lk, AK	Auke Cr, AK
11/79	coho salmon	2,500	Auke Lk, AK	Auke Cr, AK
04/26/83	cutthroat trout	1,256	Auke Lk, AK	Auke Cr, AK
08/03/83	cutthroat trout	4,078	Auke Lk, AK	Auke Cr, AK
11/22/86	cutthroat trout	3,489	Auke Lk, AK	Auke Cr, AK
08/21/87	cutthroat trout	1,725	Auke Lk, AK	Auke Cr, AK
05/06/88	sockeye salmon	100,000	Auke Lk, AK	Auke Cr, AK
08/01/88	sockeye salmon	4,678	Auke Lk, AK	Auke Cr, AK
06/01/89	sockeye salmon	11,200	Auke Lk, AK	Auke Cr, AK
11/06/91	cutthroat trout	2,483	Auke Lk, AK	Auke Cr, AK
1994	cutthroat trout	3,098	Auke Lk, AK	Auke Cr, AK

Table 1.4. Estimated total return, harvest by area, and escapement of coho salmon to Auke Lake, 1978 and 1980-1983.

AREA	AVG. (%)					AVG.	TOTAL
	1978	1980	1981	1982	1983		
Northern Outside 116, 157, 181, 183, 186, 189	—	30 (3.8%)	48 (5.4%)	19 (2.4%)	212 (19.1%)	57	5.6
Central Outside 113, 154	30 (1.9%)	7 (0.9%)	38 (4.3%)	24 (3.0%)	19 (1.7%)	28	2.9
Southern Outside 103, 104, 152	—	—	—	—	4 (0.4%)	1	0.1
Central Intermediate 112, 114	577 (36.5%)	16 (2.0%)	128 (14.6%)	262 (32.6%)	91 (8.2%)	215	18.8
Southern Inter- mediate 105, 109, 110	—	5 (0.7%)	—	23 (2.8%)	7 (0.6%)	7	0.9
Lynn Canal 115	30	—	2	7	19	12	0.9
Stephens Passage 111	261 (16.5%)	34 (4.2%)	17 (1.9%)	22 (2.7%)	65 (5.8%)	80	6.2
No. British Columbia	—	—	5 (0.6%)	—	—	1	0.1
Total catch	898 (56.8%)	94 (16.6%)	238 (27.0%)	357 (44.4%)	417 (35.7%)	401	35.5
Escapement	683 (43.2%)	698 (88.4%)	644 (73.0%)	447 (55.6%)	694 (62.5%)	633	64.5
Total return	1,581 (100%)	790 (100%)	882 (100%)	804 (100%)	1,111 (100%)	1,034	100

Chapter 2

Auke Lake (refer also to Auke Creek)

Anadromous Stream Catalog Number:
111-50-10420

Location: Lat. 58°23'17" N.
Long. 134°37'49" W.
(11.5 mile Glacier Highway)

Description

Auke Lake is about one mile long and ¼ mile wide with a surface area of 175 acres and a maximum depth of 113 feet. The lake's watershed drains an area of approximately 2,500 acres. The water is clear but has a brownish tint. The lake bottom is primarily mud with gravel areas off the inlet streams. There are abundant lily pads and floating vegetation around the perimeter of the lake.

Six inlet streams enter the lake on the north and west shores—five are used for spawning. Lake Creek and Lake Two Creek (chapters 30 and 31) are the largest inlets. Three smaller unnamed spawning tributaries are unofficially named UAJ, MB, and Hanna creeks. Figure 1.1 is a map of the Auke Creek drainage.

Fish Species Present

Auke Lake has populations of coho, pink, chum, and sockeye salmon, cutthroat trout and rainbow trout, and Dolly Varden. Additionally, the lake contains stickleback and cottids.

Fish populations in Auke Lake have remained fairly stable, with the exceptions of sockeye salmon and cutthroat trout.

Prior to 1979, the yearly sockeye return averaged more than 7,400 adults; however, from 1980 through 1985, the run plummeted from 6,022 fish to 240. These very poor returns came from nor-

mal to very strong parent runs. For some reason, production of juvenile sockeye in Auke Lake failed for several consecutive seasons. This production failure must have been due to pollution or other environmental factors that affected juvenile sockeye or their specific food chain, as other species of fish did not appear to be affected.

To counter the decrease in natural smolt production, sockeye gametes were hatched in Auke Creek Hatchery and fry released into Auke Lake for natural rearing from 1987 through 1989. This increased the number of smolts leaving the lake and led to saltwater rearing of juvenile sockeye. In 1986, natural production of sockeye in Auke Lake began to improve on its own.

Historically, Auke Lake's cutthroat trout population was reported to have been much larger than today's population; it even supported a commercial fishery. Data taken at the Auke Creek weir on all species of fish using Auke Lake are shown in tables 1.1 and 1.2. Data on the contribution of Auke Lake coho salmon to the fisheries in northern Southeast Alaska are presented in tables 1.4 and 1.5.

A small hatchery was built on Auke Creek in 1954, and the Auke Lake system has a long history of fish stocking (see table 1.3). Cutthroat enhancement activities are currently in progress at Auke Lake.

Fish Habitat

Most spawning habitat is located in the inlet streams; however, lake spawning has been documented off the mouths of Lake Creek and Lake Two Creek and in various areas of the lake proper down to 30 feet in depth. Historically, sockeye were observed to spawn at the mouth of Hanna Creek.

Lake shorelines have good floating and overhead vegetation, which provides excellent rearing habitat for coho salmon, cutthroat trout, and Dolly Varden.

Auke Lake has one of only two potentially fishable stocks of sockeye on the Juneau road system. Juvenile sockeye tend to rear in offshore areas of the lake.

Public Use

Auke Lake is the largest lake directly accessible from the Juneau road system. It receives a low level of use by anglers; however, with enhancement of fish stocks it could provide significant angler opportunity. Most fish in the lake are anadromous; consequently, they are not readily available to anglers during summer.

In 1983, 400 angler-hours of effort in Auke Lake provided a catch of nearly 300 cutthroat trout. The lake was closed to Dolly Varden angling in 1980, as local stocks were believed to be depressed and Auke Lake was a known overwintering area where fish were especially vulnerable.

Auke Lake currently receives a moderate amount of pressure from ice fishermen targeting on cutthroat trout; however, this fishery has not been monitored to determine the catch or effort.

A hiking trail was recently built around the east shore of Auke Lake from Mendenhall Loop Road to Glacier Highway. The trail will provide good access for shoreline angling.

Fish produced in Auke Lake are important to the recreational fisheries at public and private boat docks in Auke Bay and along marine shorelines.

Land Ownership

The south and southwest shore of Auke Lake are State land. The Juneau campus of the University of Alaska-Southeast is located on the southwest shore of the lake.

The northwest and north shorelines of the lake, accessible from Mendenhall Loop Road, are private land. Twelve to fifteen private homes are located on the shoreline of the lake in this area.

All of the east shore of the lake belongs to the City and Borough of Juneau. The eastern shoreline is quite steep.

Land Uses

Auke Lake is vulnerable to residential development, road construction, mining, and water withdrawal, all of which are occurring in this watershed. There are many residences located in the Auke Lake watershed; however, relatively few are actually situated where they would have a direct effect on Auke Lake.

Most areas in the Auke Lake watershed have access to municipal water, but not to sewage systems; thus, sewage contamination is the main concern associated with residential development. Water rights currently on file for

this system include one permit for water use in the Auke Creek hatchery and one permit for 500 gpd for domestic use.

Road construction has had definite detrimental impacts on fish habitat values of Auke Lake. In the late 1960's, sediment from construction of Mendenhall Loop Road is believed to have buried spawning habitat at the mouth of Hanna Creek.

In 1983, construction of the road to the UAS-Juneau housing project virtually eliminated one spawning creek that has only recently been reestablished. The construction of student housing was also responsible for large amounts of sedimentation in areas along the northwest shore of Auke Lake.

Hard rock mining has occurred in areas drained by Lake Creek. Chemical leachates from mineral extraction are the main concern with mining activities.

Upper areas in the Auke Lake drainage are designated as L.U.D. III by the USFS; however, the area is not to be included in the timber base.

Conclusion

Because of this lake's excellent accessibility, potential for development

of recreational fisheries, and the fish hatchery located on the lake's outlet, this system should be given the highest level of protection. With development of recreational fisheries and public access, Auke Lake could easily become a major freshwater recreation area in the Juneau area.

Recommendations

Spawning habitats in the Auke Lake drainage should be reestablished where the potential exists. Water quality should be maintained at all costs. Landowners and developers should be urged to locate development as far as possible from the lake and inlet streams.

The east shoreline of Auke Lake is quite steep, and drainage from development in this area would be difficult to control. Development on the east side of Auke Lake should not occur in areas where the drainage would enter Auke Lake; i.e., a wide greenbelt of CBJ property should be provided.

The city sewer system should be extended to all areas adjacent to Auke Lake, as the area has a very high water table and high fecal coliform counts have been documented in local surface water. ■

Chapter 3

Auke Nu Creek

Anadromous Stream Catalog Number:
111-50-10350

Location: Lat. 58°22'58" N.
Long. 134°39'56" W.
(13.2 mile Glacier Highway)

Description

Auke Nu Creek drains a watershed of approximately 1 square mile and is crossed by Glacier Highway, where it empties into the north side of Auke Bay (figure 3.1). The stream averages about 1 foot deep and 10 feet wide. The water

is clear with a brown tint, and the stream flow is rapid. The stream bottom consists primarily of bedrock. The stream flows through a canyon for the first $\frac{1}{8}$ mile from its mouth, then starts to "stair-step" over small falls. Above the canyon, the stream flows through a flat area,

where it has shallow banks with light brush cover.

Another canyon lies at the upper edge of the flatland, extending approximately $\frac{1}{8}$ mile. Its only tributary enters about 200 yards from the mouth and is accessible to fish for about 200 yards. There is an abandoned, flooded mine shaft at the confluence of the tributary and main stream.

Fish Species Present

Auke Nu Creek contains Dolly Varden. Five minnow traps fished on July 1, 1970, averaged 1 Dolly Varden per trap. An escapement survey in 1968 revealed 25 pink salmon spawning in the lower creek; however, in some seasons many more spawning pinks were observed in the stream.

There are no fish stocking records for Auke Nu Creek.

Fish Habitat

The stream has a steep gradient, and most of the rearing habitat present is provided in pools below small falls and bedrock steps. The stream banks have heavy vegetative cover; however, the rearing potential of the stream is only fair. There appears to be a good intertidal spawning area below Glacier Highway.

The main stream and tributary offer poor-to-fair spawning habitat due to the presence of a large amount of bedrock and boulders. An impassable falls is located about $\frac{1}{4}$ mile above Glacier Highway.

Public Use

Steep banks and heavy brush make access along the stream difficult. The mouth of Auke Nu Creek receives constant—but not heavy—use by sport anglers during the summer. The topography of the marine shoreline at the mouth of Auke Nu Creek is conducive to sport fishing, especially at low tide. Fish headed to Auke Nu Creek and other Auke Bay streams tend to mill off the stream mouth.

Fish produced in Auke Nu Creek are likely to be important contributors to the recreational fishery in Auke Bay. Auke Nu Creek has been closed to salmon fishing since 1962.

The mouth of Auke Nu Creek is also a favorite spot for clam digging.

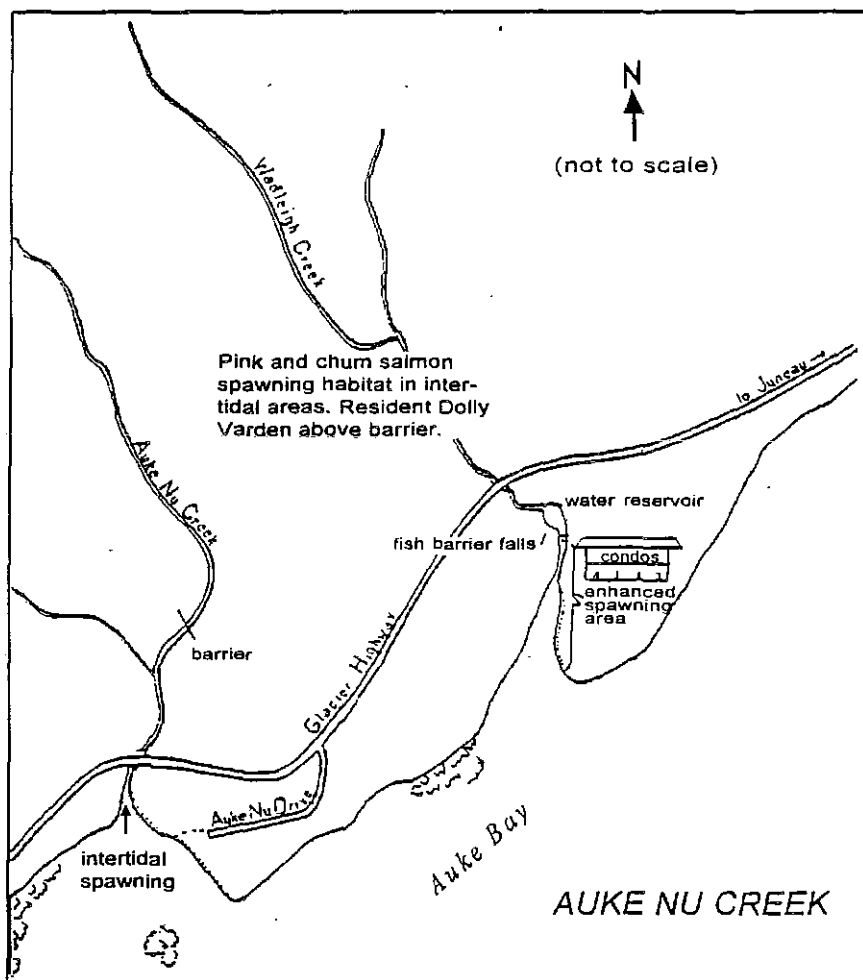


Figure 3.1 Auke Nu Creek.

Land Ownership

Auke Nu Creek originates on U.S. Forest Service property and runs through property owned by the City and Borough of Juneau (CBJ). The stream mouth is located on state tidelands.

Land Use

The upper reaches of Auke Nu Creek are still in an essentially wild state and

have not been impacted by land use activities. The productivity of the stream may have been impacted at least for a short period by construction of Glacier Highway; however, fill areas have stabilized and are not presently a concern.

Conclusion

Auke Nu Creek is probably most important as a spawning system for non-rearing species—i.e., pink and

chum salmon. The stream provides only limited habitat for rearing species of salmonids.

Recommendations

Water quality of the stream should be maintained in order to protect the productive spawning habitats in the lower reaches of the creek and intertidal areas. ■

Chapter 4

Bay Creek

Anadromous Stream Catalog Number:
111-50-10390

Location: Lat. 58°23'15" N.
Long. 134°38'48" W.
(12.4 mile Glacier Highway)

Description

Bay Creek is located approximately 11 miles northwest of Juneau and is crossed by Glacier Highway immediately above tidewater. It drains into the northernmost end of Auke Bay between DeHart's Store and Fishermen's Bend Marina (figure 4.1).

Bay Creek ranges from 2 to 5 feet in width and from 7 to 16 inches in depth. It is about 1/2 mile in length. Its gradient is moderate with numerous "stair-steps" caused by low dams. The water is clear but has a brown tint.

Fish Species Present

Bay Creek has populations of coho and pink salmon and Dolly Varden. There are no fish stocking records for Bay Creek.

Fish Habitat

Bay Creek is small but appears to be very productive for its size. Most spawn-

ing habitat is found in the lower 50 yards of the stream and in the intertidal area.

Small pockets of spawning substrate are found in the upper reaches of the stream. The stream has numerous pools, overhanging banks, logs, and dense overhead cover which provide excellent habitat for rearing species of fish. There are several small dams (apparently man-made) that could be fish barriers at low water levels; however, at normal water levels, there are no barriers on Bay Creek.

Minnow trap data for Bay Creek are summarized below:

Bay Creek minnow trap data				
Date	No. traps	Coho salmon	Dolly Varden	Cutthroat trout
7/22/70	5	16	3	0
5/22/85	5	2	32	0
4/10/90	6	0	12	1

Public Use

Bay Creek received little public use except for fishing at the stream mouth until 1990, when an aquatic education trail was constructed in the upper watershed. The trail heads at the Auke Bay Elementary School playground and receives heavy use by teachers and students of the school. The Bay Creek drainage provides an excellent location for an educational trail, and Bay Creek was the first such educational trail to be constructed in Juneau.

Land Ownership

The lower reaches of the stream are mostly on State land and the upper reaches are on property owned by the City and Borough of Juneau. Auke Bay Elementary School is located on the east shore of Bay Creek and the UAS Student Housing complex is located directly above the headwaters. Two private residences are located on the west side of the creek upstream from Glacier Highway. A CBJ sewer pump station is located alongside the stream downstream from Glacier Highway.

Land Uses

Bay Creek has at least three small man-made dams which could have minor effects on habitat values. It is believed that water withdrawal is occurring in two locations on Bay Creek. Two permits for water withdrawal are on file for this stream. Some intertidal areas adjacent to Bay Creek have been filled to provide useable uplands.

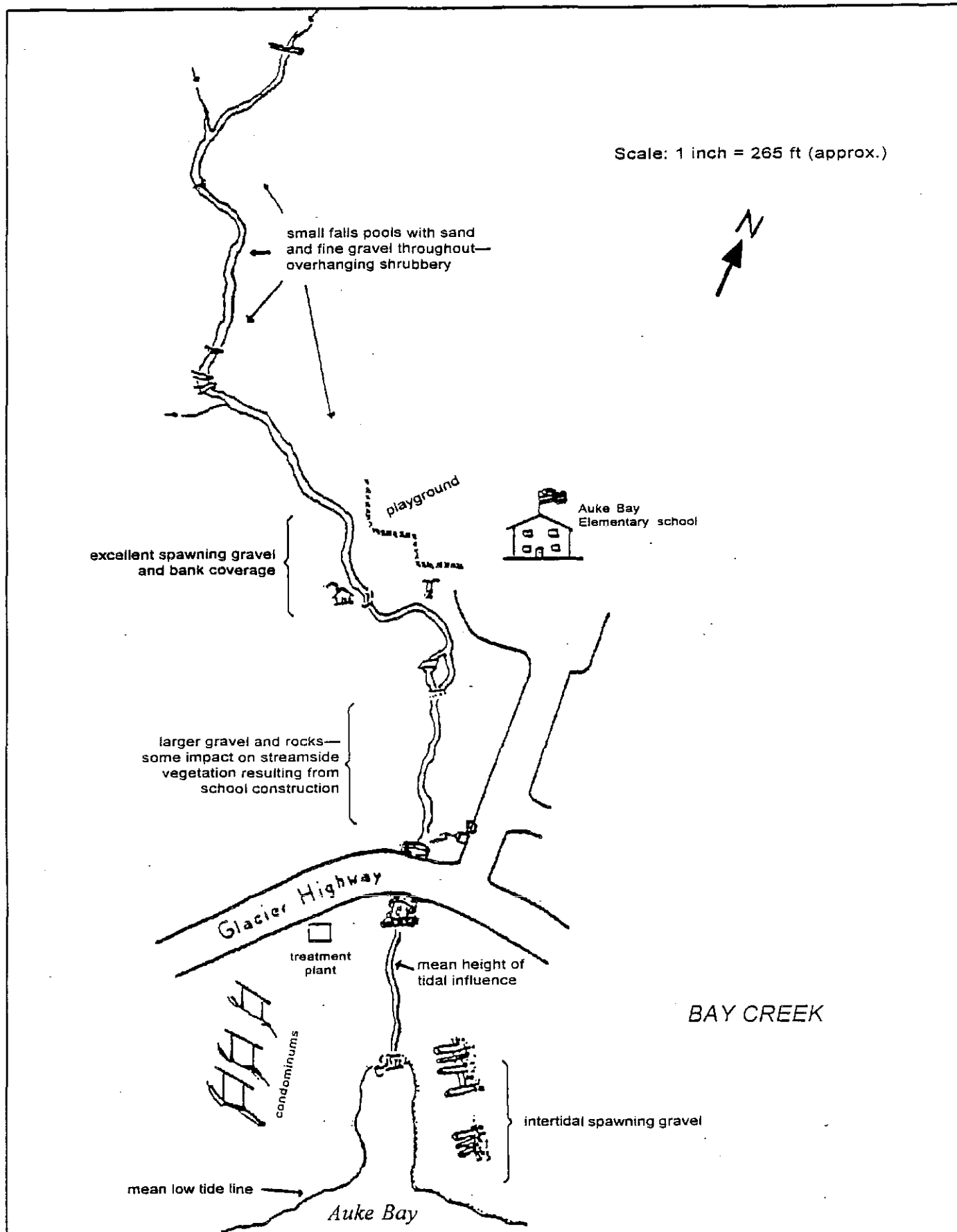


Figure 4.1 Bay Creek

Conclusion

The entire length of Bay Creek has been impacted by various land uses, yet the stream has generally recovered from the short-term effects. It is a small, but productive, stream and its fishery values are high given the stream's location in Auke Bay which is a major boating and fishing area.

Recommendations

Future development in the Bay Creek drainage should not be allowed to impact the fish habitat values and natural features in the drainage of Bay Creek. The stream should be given

streamside buffers that would protect habitat from fill encroachment and sedimentation.

Water quality should be maintained and considered extremely important. Additional water withdrawal should be prevented and current withdrawal curtailed as soon as possible.

Bay Creek should be maintained in its natural state to provide the educational opportunity made possible through development of the aquatic education trail.

An opportunity to improve spawning habitat exists below Glacier

Highway. Enhancement could consist of excavating a pool at the downstream end of the existing highway culvert, along with the importation and stabilization of high quality spawning gravel downstream of the pool for approximately 100 feet (the area currently used for spawning by anadromous pink and chum salmon).

The stream adjacent to the elementary school provides excellent fish habitat and could easily provide an outdoor classroom for the entire Juneau school district. ■

Chapter 5

Bear Creek

Anadromous Stream Catalog Number:
111-50-10850

Location: Lat. 58°16'51" N.
Long. 134°46'47" W.
(flows under 3rd St., near 'F' St. in Douglas)

Description

Bear Creek, located on Douglas Island, is a small stream with a steep gradient that flows approximately 1½ miles before emptying into Gastineau Channel (figure 5.1).

Bear Creek served as the water supply for the City of Douglas for many years. A water diversion dam still exists about ¼ mile upstream from the stream mouth, but water is no longer being withdrawn from the stream.

Fish Species Present

Bear Creek has not been surveyed. The stream is presumed to have a resident population of Dolly Varden. Eastern

brook trout have been reported in the water reservoir, which would mean they are probably in the stream too. Neither Dolly Varden nor eastern brook trout populations have been confirmed. Pink salmon spawn intertidally below a barrier falls at the head of tidewater.

Salmon escapement counts have not been conducted at Bear Creek; however, the natural run probably numbers less than 100 adult pink salmon.

In recent years up to 1,000 or so pink salmon have occasionally milled in and around the stream mouth, but most of these are believed to be strays from private hatcheries in Gastineau Channel. There are no stocking records for Bear Creek.

Fish Habitat

Bear Creek provides rearing habitat in pools, however, the lower ½ mile of the stream has a steep gradient. Spawning habitat located in the intertidal area is of questionable value, as the substrate is mostly large cobbles. There is a barrier falls at the head of tidewater.

Public Use

There is some recreational angling activity targeting on pink salmon at the mouth of Bear Creek, but the stream itself is closed to fishing.

Bear Creek is located close to Gastineau Elementary School in Douglas. An aquatic educational trail which has been constructed for school use alongside the stream receives a high level of use.

Land Ownership

The upper reaches of Bear Creek are located on property owned by the City and Borough of Juneau. The stream is bounded by private property within the City of Douglas and the tidelands are owned by the State.

Land Use

Bear Creek has been impacted by its use as a water supply. Stream banks in some sections of the lower creek have

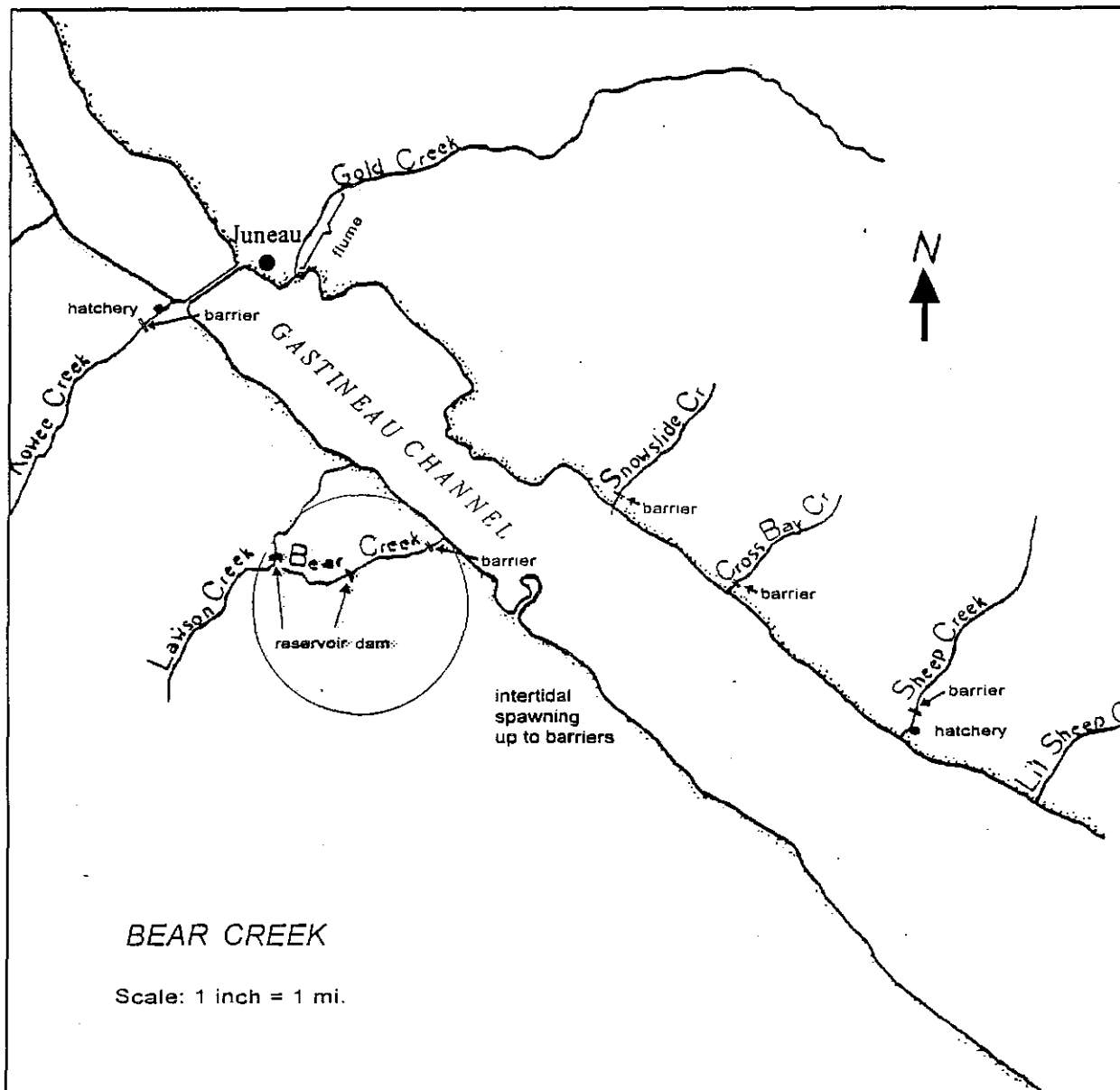


Figure 5.1 Bear Creek.

been stabilized by gabion baskets and/or rip-rap. In 1983, a water-use permit was granted to a private landowner for a small hydroelectric plant. The stream is vulnerable to impacts by further expansion of the City of Douglas.

Conclusion

Given the steep gradient and fish block at the head of tidewater, minimal fishery values of Bear Creek are presumed.

Recommendations

The water quality of this stream should be maintained, to preserve instream fishery values and to prevent impact to intertidal spawning areas. ■

Chapter 6

Bessie Creek (refer also to Bessie Lake)

Anadromous Stream Catalog Number:
115-10-10250

Location: Lat. 58°35'27" N.
Long. 134°53'59" W.
(35 mile Glacier Highway)

Description

Bessie Creek flows about 2 1/2 miles from Bessie Lake and enters salt water in Yankee Cove (figures 6.1 and 6.2). The stream averages 10 to 12 feet wide and 6 to 20 inches deep. The water color is clear, with a slight brown tint.

The stream flows through relatively flat terrain near Bessie Lake; however, most of the creek has a steep gradient. The stream bed consists of rock, large gravel, and coarse sand. Glacier Highway crosses the creek about 1/8 mile from the stream mouth. An impassable falls is located just upstream from Glacier Highway.

Fish Species Present

Bessie Creek has populations of cutthroat trout and Dolly Varden. There are no fish stocking records for Bessie Creek.

Trapping data on Bessie Creek are summarized below.

Fish Habitat

There are numerous pools downstream from the falls, but they lack overhead cover and provide only fair rearing conditions. There is some intertidal spawning area at the creek mouth.

The stream is generally of a steep gradient from the falls to 1 mile below the lake. There are numerous chutes and small falls that would limit upstream movement of fish. This section of stream was not surveyed but is presumed to contain populations of Dolly Varden and cutthroat trout.

Directly below Bessie Lake, the stream has a flat gradient, excellent streamside cover, and is undoubtedly important for both spawning and rearing. This area also shows signs of beaver activity.

Public Use

Bessie Lake and the upper portion of the creek are accessed by a 2-mile trail from Mile 35 Glacier Highway.

The lake and upper creek receive a moderate amount of recreational angling pressure. This is one of very few areas that provide angling opportunities in a remote wild setting that is accessible from the Juneau road system.

There are no developed public facilities in the area. The mouth of Bessie Creek is a popular spot for fishing and other beach recreation.

Land Ownership

Bessie Creek and Lake are primarily located on U.S. Forest Service land. The trail directly above Glacier Highway skirts a parcel of private property. The stream also flows through private property near the stream mouth.

Land Uses

Bessie Creek is virtually in a wild and pristine condition, except for the Glacier Highway crossing. The highway construction was a source of heavy downstream sedimentation during construction in 1968-69.

Bessie Creek would be especially vulnerable to logging and its associated activities which were proposed by the U.S. Forest Service in 1983. A proposed timber unit actually used the stream as the timber unit boundary. On July 17, 1984, the Alaska Department of Fish and Game made a request to the U.S. Forest Service District Ranger to move the timber unit boundary away from the stream and to provide a buffer.

Conclusion

The upper Bessie Creek and Lake area provides a unique opportunity in the Juneau area, in that it is one of the last remote areas accessible from the road system where one can expect to catch cutthroat trout and not encounter large numbers of people.

The overall level of use and harvest in this area is small; however, it is the small size of the area which makes it unique.

Bessie Creek trapping data			
DATE	AREA	No. TRAPS	CATCH
9/28/71	below falls	2	4 Dolly Varden char
7/12/84	below lake	4	25 cutthroat trout

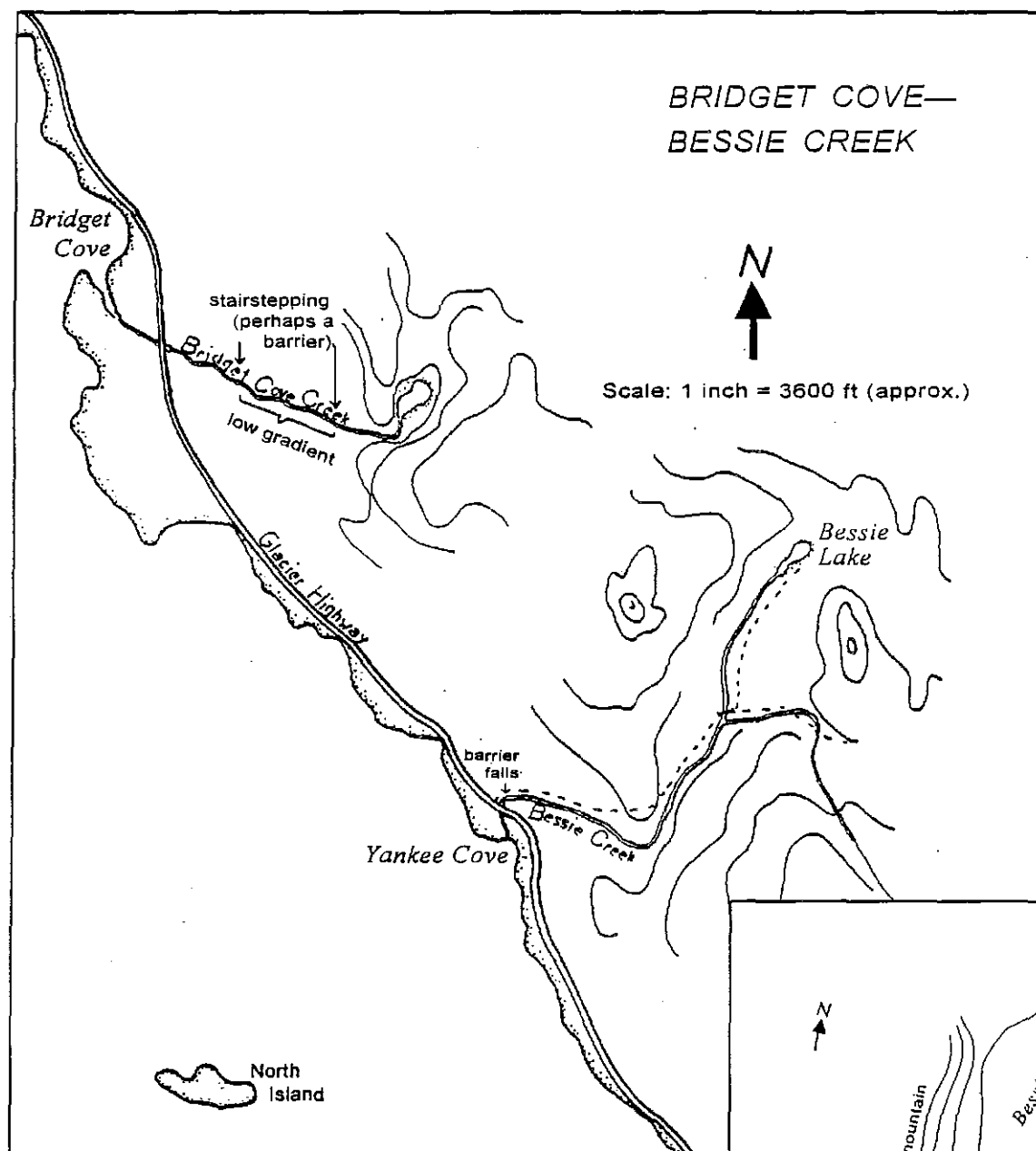


Figure 6.1 Bridget Cove area, Bessie Creek, and Bessie Lake.

Recommendations

The area should be maintained in its current natural condition; i.e., any proposed logging activities should be located so that they will not impact the physical and visual qualities of upper Bessie Creek and Lake. The habitat values and water quality of lower Bessie Creek should be maintained through critical review of land use permit applications. ■

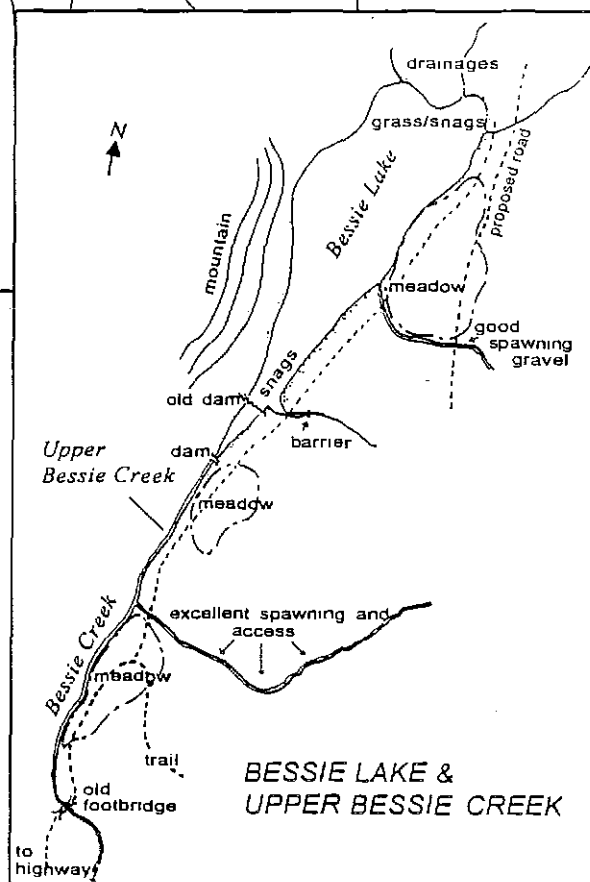


Figure 6.2
Upper Bessie Creek
and Bessie Lake

Chapter 7

Bessie Lake (refer also to Bessie Creek)

Anadromous Stream Catalog Number:
None

Location: Lat 58°37' N.
Long. 135°55' W.
(approximately 26 miles NW of Juneau)

Description

Bessie Lake is a small pristine lake of approximately 5 acres. The lake is surrounded by mature spruce and hemlock (see figure 6.2, previous page). The shores of the lake are quite boggy, with floating grass mats and lily pads. The average depth of the lake is 9 to 10 feet, and its maximum depth is 16 feet. The bottom of the lake is mud with plant matter. Natural plant succession along the shorelines and encroachment into the lake is obvious.

Fish Species Present

Bessie Lake has populations of cutthroat trout and Dolly Varden.

Fish survey data collected at Bessie Lake are summarized below.

Fish Habitat

Bessie Lake is a very small but quite productive lake. Numerous fallen trees in the lower end and along the west shore of the lake, in addition to abundant emergent and floating vegetation, provide excellent rearing habitat.

The lake has no major inlets; however, excellent spawning habitat is found in the upper section of the outlet of the lake and in two small inlets.

Public Use

Bessie Lake is accessed by a 2-mile trail beginning at Mile 35 Glacier Highway. The lake receives a moderate amount of angler use for its small size. Bessie Lake is unique because it is one of only a few systems accessible from

the road where anglers can fish in a remote pristine setting. There are no developed public facilities in the area. Small inflatable boats or float tubes greatly assist anglers fishing Bessie Lake.

Land Ownership

Bessie Lake is located entirely on U.S. Forest Service property.

Land Uses

Logging and associated activities which have been proposed would pose the greatest threat to Bessie Lake and its unique setting. The drainage could also be impacted by mining.

Conclusion

Upper Bessie Creek and Lake provide a unique opportunity in the Juneau area, in that this is one of the last remote areas accessible from the road system where one can expect to catch cutthroat trout and not encounter large numbers of people. Bessie Lake appears to be a good study area for vegetative encroachment and natural succession in lake environments.

Recommendations

The Bessie Lake area should be maintained in the current natural setting; i.e., all proposed logging activities should be located so that they will not impact the physical and visual qualities of the area.

In addition, Bessie Lake would be an excellent location for a study of natural plant succession and its effects on a lake. ■

Bessie Lake survey data		
DATE	GEAR	CATCH
9/5/79	6 Gee minnow traps	18 Dolly Varden, 100-215mm in length 2 cutthroat trout, 105-175mm in length
9/5/79	sunken gillnet	1 Dolly Varden, 230mm in length 3 cutthroat trout, 215-245mm in length

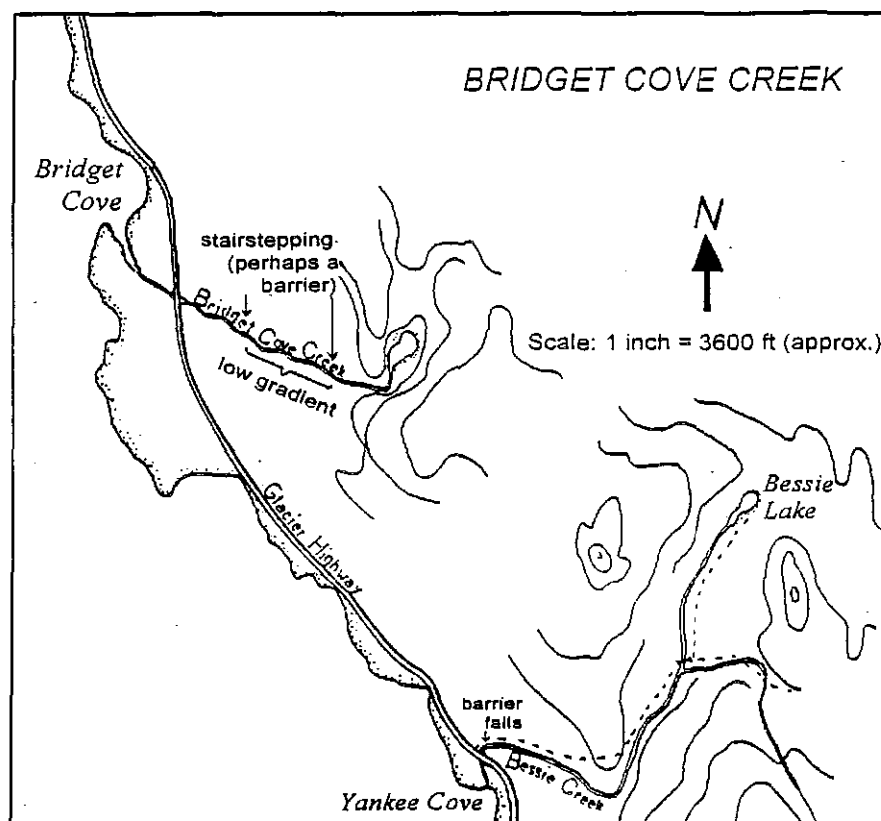


Figure 8.1 Bridget Cove Creek.

Chapter 8

Bridget Cove Creek (unofficial)

Anadromous Stream Catalog Number:
115-10-10230

Location: Lat. 58°37'16" N.
Long. 134°56'11" W.
(37.3 mile Glacier Highway)

Description

This small stream is approximately 5 to 6 feet wide and 1 foot deep. It flows in a northwesterly direction for about 3 miles before entering salt water in the south end of Bridget Cove (figure 8.1).

The stream originates from a small lake situated at the 500 foot elevation which has not been surveyed.

Glacier Highway crosses the stream about 1/4 mile upstream from the stream

mouth. The lower mile of the stream has a low gradient and the stream is clear.

Fish Species Present

Coho salmon have been documented in Bridget Cove Creek, and the stream is also presumed to contain Dolly Varden and perhaps cutthroat trout.

One minnow trap set on August 28, 1971, caught 8 juvenile coho salmon.

An additional 30 rearing coho salmon were observed in the stream. There are no stocking records for this system.

Fish Habitat

The stream provides excellent rearing habitat downstream from the highway, with numerous logs, pools, and undercut banks. Above the highway, the stream begins to "stair-step" and provides fewer rearing areas. Spawning habitat is located primarily in the lower part of the stream. Pockets of spawning substrate are located throughout the remainder of the stream.

Public Use

There are no records of public use of this system; however, it could provide some angling opportunity. The lower 1/2 mile of the stream offers good potential for small stream angling.

Land Ownership

The lower part of Bridget Cove Creek is located on lands selected by the City and Borough of Juneau, and the upper reaches are located on the Tongass National Forest.

Land Uses

This stream has not been impacted by land use, except for the crossing of Glacier Highway. Potential logging and mining may pose the greatest threat to this system.

Conclusion

This system is a small, but productive stream which remains in a nearly natural condition.

Recommendations

Excellent fish habitat is found throughout this stream. Thus, it will be necessary to critically review land use permit applications and conduct on-site surveys to provide stipulations to protect its habitat values.

It is recommended that further surveys of this stream (and lake) be conducted to assess its fish values, angling potential, and magnitude of the spawning escapement. ■

Chapter 9

Campground Lake (unofficial)

Anadromous Stream Catalog Number:

111-50-10500-0020

Location: Lat. 58°24'46" N.

Long. 134°29'32" W.

(USFS Mendenhall Campground)

Description

Campground Lake is a small clearwater pond of about 6 acres located in the U.S. Forest Service Mendenhall Campground (figure 9.1). A culvert under the campground road joins the pond to Mendenhall Lake. Campground Lake has a maximum depth of approximately 12 feet.

Fish Species Present

Fish species present include coho salmon and Dolly Varden. Minnow trap data was collected at Campground Lake on June 25, 1982. Ten minnow traps captured 18 coho salmon and 3 Dolly Varden.

This lake has not been stocked.

Fish Habitat

Campground Lake has good cover extending from the shorelines with emergent vegetation in some areas. Good cover, along with the generally shallow lake depth and subsequent warm water, provides excellent rearing conditions.

A small channel attaches this pond to Mendenhall Lake. The culvert under the campground road is probably a block to fish passage at low water levels.

Public Use

This small picturesque lake is located in the center of a very popular campground. Consequently, the lake receives some angling pressure, even though fish of a catchable size are in short supply during the summer. The level of angling pressure and harvest have not been documented.

Land Ownership

The lake is located entirely on U.S. Forest Service property.

Land Use

A gravel road runs adjacent to the lake. Drainage and dust from the road probably has some effect on the lake; however, it has not been documented to be a problem.

Conclusion

Other than the presence of the road, this lake appears to be in a very natural condition. Because of the small size of the lake, its enhancement potential is very low, even though public access and growth of stocked fish might be good. The small lake provides excellent rearing for anadromous fish and any stocking activities would likely be at the expense of the natural production.

Recommendations

Habitat values of the lake should be maintained. Dust control chemicals should not be used on the road. The culvert under the road should be checked periodically to ensure the channel does not block fish passage. ■

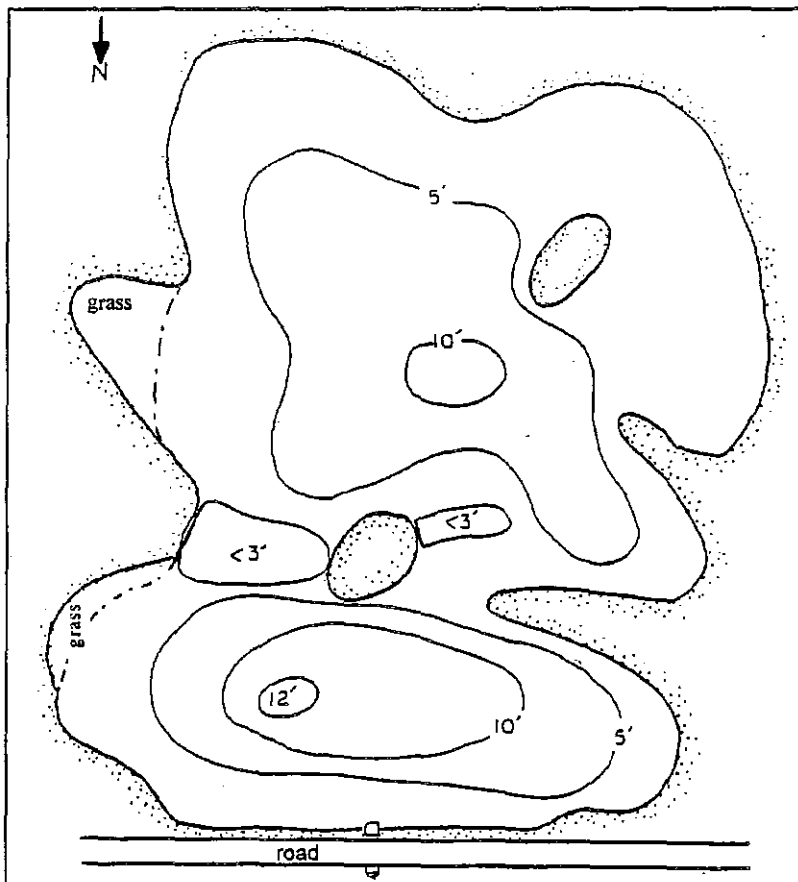


Figure 9.1 Campground Lake.

Chapter 10

Pederson Hill Creek

(earlier edition used unofficial name of
'Casa Del Sol Creek')

Anadromous Stream Catalog Number:
111-50-10490-2013

Location: Lat. 58°21'41" N.
Long. 134°37'18" W.
(SW side of Mendenhall Valley)

Description

This stream originates on the eastern slope of Pederson Ridge and drains an area of over 1,000 acres on the ridge and southwest corner of the Mendenhall Valley (see figure 10.1, following page).

Two of the largest tributaries run off Pederson Ridge and two smaller forks originate in the wetlands south of Glacier Highway. One of the larger tributaries runs under Engineers Cutoff Road near its intersection with Glacier Highway. The other is at 0.3 mile Engineers Cutoff Road. One of the smaller tributaries originates along side of Glacier Highway west of Sherwood Lane and the other in the meadows east of Sherwood Lane. The stream enters salt water in Fritz Cove, west of the mouth of the Mendenhall River.

Both larger tributaries run directly off Pederson Ridge and enter the grassy wetlands at the base of the ridge. In forested areas, both of the larger tributaries average 3 to 4 feet wide and up to 1 foot deep. In the wetlands, the streams are 3 to 5 feet wide and 1 to 3 feet deep.

The system has many meanders and wide floodplains in the wetlands. The water color is clear with a brownish tint. The intertidal section of this system is over a mile long.

Fish Species Present

The stream system has populations of coho salmon, cutthroat trout, and Dolly Varden. Marine species rear in the lengthy intertidal area.

This system has not been stocked.

Minnow trap data collected on Pederson Hill Creek are summarized below.

Fish Habitat

The upper reaches of the system flow through forested areas and provide excellent habitat for both rearing and spawning. The lower sections of the tributaries and mainstem have a very low gradient and flow through grassy wetlands. Overhanging grass, numerous overhanging banks, and meanders provide excellent rearing area in this section of the stream.

The only barrier on the drainages is a dam on the west fork directly above Engineers Cutoff Road. The intertidal

Pederson Hill Creek minnow trap data				
DATE	AREA	No. TRAPS	COHO	DOLLY VARDEN
4/4/85	main stem	10	66	6
4/4/85	west fork	10	12	5

area is known to be very important springtime habitat for pink and chum salmon fry from local streams.

Public Use

Public use of this system has not been documented. The stream could support some angling pressure. In the wetlands, the system receives quite heavy use by waterfowl hunters in fall.

Land Ownership

Nearly all of this system is under private ownership. Only the lower section of the stream is located on the Mendenhall Wetlands Refuge.

Land Use

All tributaries in the upper reaches of this system have been crossed by roads. Culverts seem to pass fish adequately; however, the roads have undoubtedly affected the stream's hydrology to some degree.

Areas adjacent to the upper main tributary have been filled and developed into a small commercial/industrial center. Additional requests for fill in the area can be expected, as the area is zoned for industrial development.

The west fork has a private water withdrawal dam located just upstream from Engineers Cutoff Road. This dam is undoubtedly a barrier to upstream migrants except at high water levels, as rearing coho were found above the dam.

Developed sites along Sherwood Lane drain into the system. In July 1985, a turbid septic-smelling drainage from one of the commercial buildings on Sherwood Lane was found to be flowing directly into the creek; it was reported to DEC. Samples revealed the drainage to be raw sewer overflow drainage which was subsequently stopped.

Conclusion

This stream is a small but valuable producer of coho salmon and Dolly Varden, primarily because of its location in the middle of a populated area

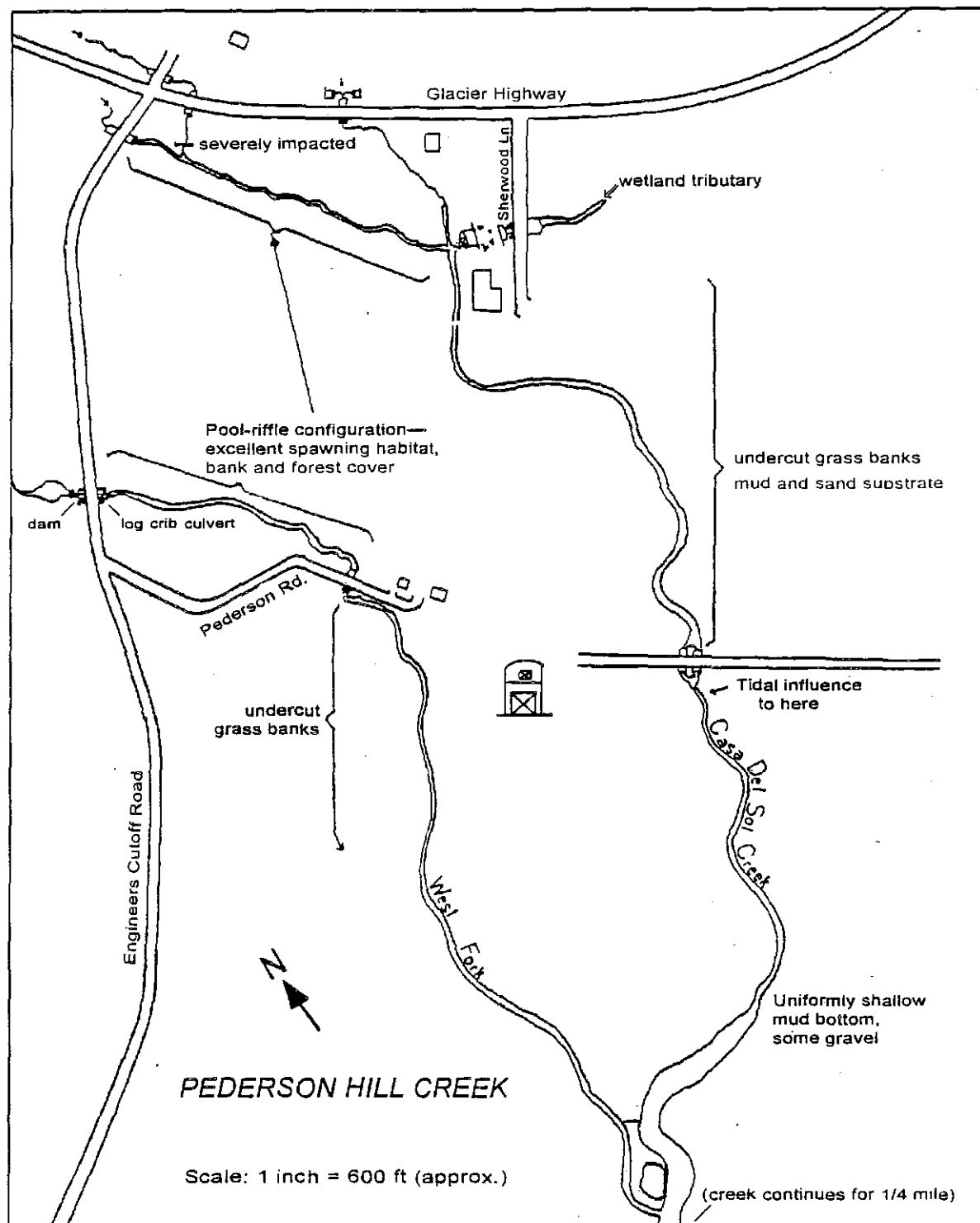


Figure 10.1 Pederson Hill Creek.

where its fish production is in such high demand.

Land use that would degrade the fisheries values of this stream can be expected in the future, and stipulations offering maximum protection to the stream's fishery values must be provided.

Recommendations

Excellent fish habitat is found throughout this stream; thus, critical review of land use permit applications and on-site surveys will be required to maintain habitat values. As mitigation for permitted crossings in the upper reaches, pools could

be excavated in the stream for rearing and fish refuge during low flows. In the lower areas, spawning substrate could be placed in the stream adjacent to culverts. The magnitude of the salmon spawning escapements in this system should be determined. ■

Chapter 11

Cove Creek

Anadromous Stream Catalog Number:
none

Location: Lat. 58°19'42" N.
Long. 134°36'56" W.
(9.4 mile North Douglas Highway)

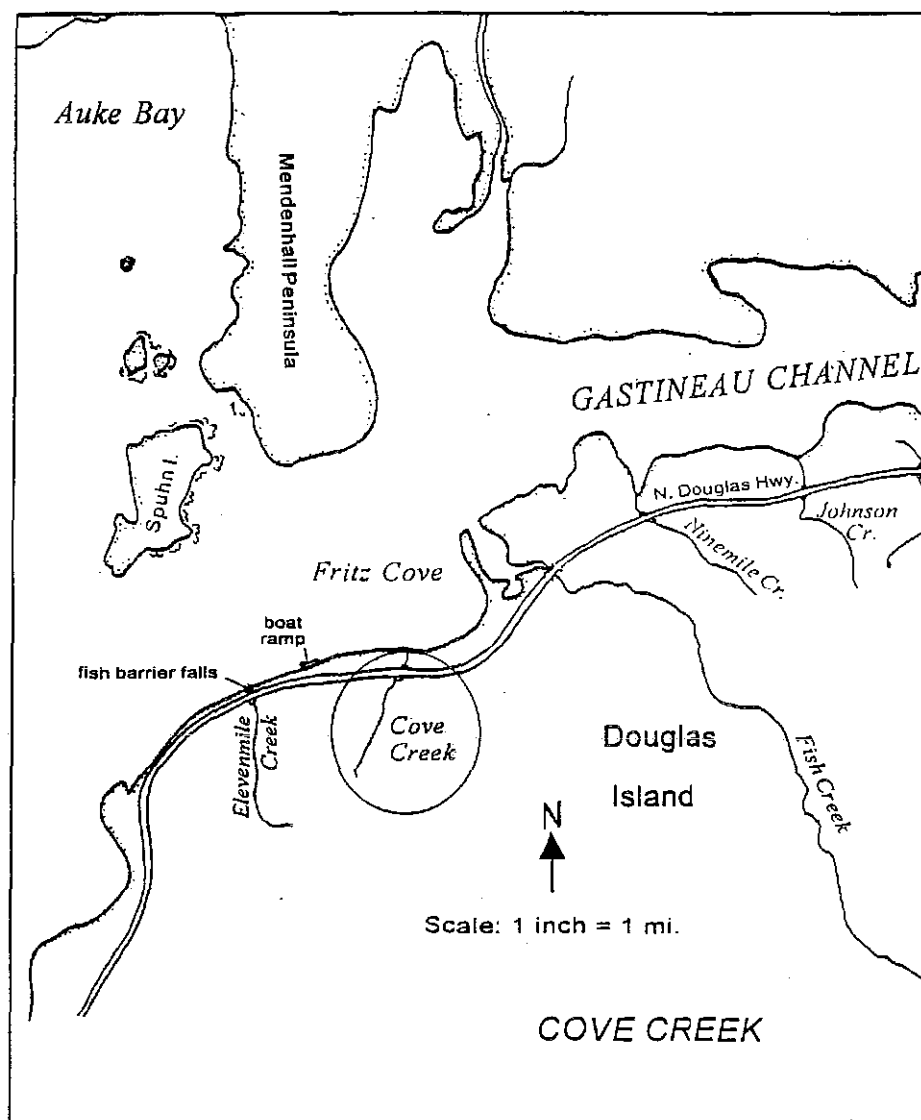


Figure 11.1 Cove Creek.

Description

Cove Creek flows in a northerly direction for approximately 1 mile on Douglas Island and enters salt water in Fritz Cove at approximately 9.4 mile North Douglas Highway (figure 11.1). The stream has a very steep gradient and a barrier falls at tidewater.

Fish Species Present

There may be resident fish above the falls, but because of the stream's very small size and its steep gradient, it has not been surveyed.

Public Use

No public use has been documented.

Land Ownership

The stream is located within the boundaries of the Tongass National Forest.

Land Uses

Cove Creek is crossed by the North Douglas Highway near tidewater.

Conclusion

Cove Creek presently has little value as a fish stream.

Recommendation

Cove Creek would be worthy of an investigation to determine the feasibility of using its water for imprinting salmon smolts to Fritz Cove. The marine shoreline topography would be suitable for the use of net pens in which fish could be retained for imprinting.

Its water quality should be maintained because of the potential impact it could have on Fritz Cove. ■

Chapter 12

Cowee-Davies Creek

Anadromous Stream Catalog Numbers:

115-20-10620 & 115-20-10620-2003

Location: Lat. 58°39'42" N.

Long. 134°56'32" W.

(40 mile Glacier Highway)

Cowie-Davis Creek system might be one of the most productive systems on the Juneau road system. It is believed that the Cowie-Davis Creek system could have annual fish returns of the following magnitudes:

coho salmon	2,000
pink salmon	30,000
chum salmon	8,000
Dolly Varden	20,000
cutthroat trout	1,000
steelhead trout	100

Salmon escapement data are presented in table 12.1.

Juvenile fish trapping data are not available for this stream.

There are no fish stocking records for the Cowee-Davies Creek system.

Description

The Cowee-Davies system drains an area of approximately 46 square miles and enters salt water in the south end of Berners Bay (figure 12.1). The Cowee-Davies system runs semi-glacial from spring to fall and clear during the colder months.

Cowee Creek averages 40 to 50 feet in width and 2 to 4 feet in depth near the highway bridge. Cowee Creek flows for approximately 9 miles in a westerly direction and has several tributaries, of which Davies Creek is the largest. Cowee Creek has a low to moderate gradient throughout its length.

Smaller tributaries include Canyon Creek and the south fork of Cowee Creek (figure 12.1).

Davies Creek drains a basin approximately 2 miles north of Cowee Creek and enters Cowee Creek approximately ½ mile above the bridge. Davies Creek has a low gradient in the upper basin, assumes a steep gradient at the mouth of the basin and again flattens out prior to joining Cowee Creek.

Fish Species Present

The Cowee-Davies system has populations of coho, pink, and chum salmon, Dolly Varden, and cutthroat trout, and it is reported to have small runs of spring and fall steelhead.

Fish populations in this large system have never been assessed, either through juvenile fish studies or escape-

ment surveys. The large drainage and semi-glacial water condition are the main reasons for the lack of information on its fish populations. The

Table 12.1. Summary of salmon escapement data for Cowee Creek.

YEAR	COHO	PINK	CHUM
1949	-	32 (08/26)	400 (08/26)
1950	-	17 (08/26)	300 (08/26)
1959	-	-	100 (08/22)
1960	-	no fish observed	no fish observed
1961	-	no fish observed	no fish observed
1962	-	-	1,200 (10/11)
1963	-	-	8 (08/21)
1964	-	no fish observed	no fish observed
1965	-	no fish observed	no fish observed
1966	-	no fish observed	no fish observed
1967	-	no fish observed	no fish observed
1968	-	no fish observed	no fish observed
1969	-	-	7 (10/14)
1970	-	no fish observed	no fish observed
1971	-	no survey	no survey
1980	-	3,000 (08/20)	8 (08/20)
1981	-	1,000 (07/28)	-
1982	113 (10/21)	69 (10/21)	-
1983	25 (10/13)	67 (10/13)	-
1984	15 (10/28)	0	-
1985	19 (10/07)	18,285 (08/28)	190 (08/29)
1986	7 (10/25)	-	141 (08/04)
1987	-	16,300 (08/06)	-
1988	-	1,427 (08/12)	38 (08/12)
1989	-	4,656 (08/29)	14 (08/15)
1990	-	-	-
1991	-	-	-
1992	-	10,000 (07/22)	-
1993	-	200 (07/21)	-
1994	-	19,150 (07/27)	2,500 (07/20)

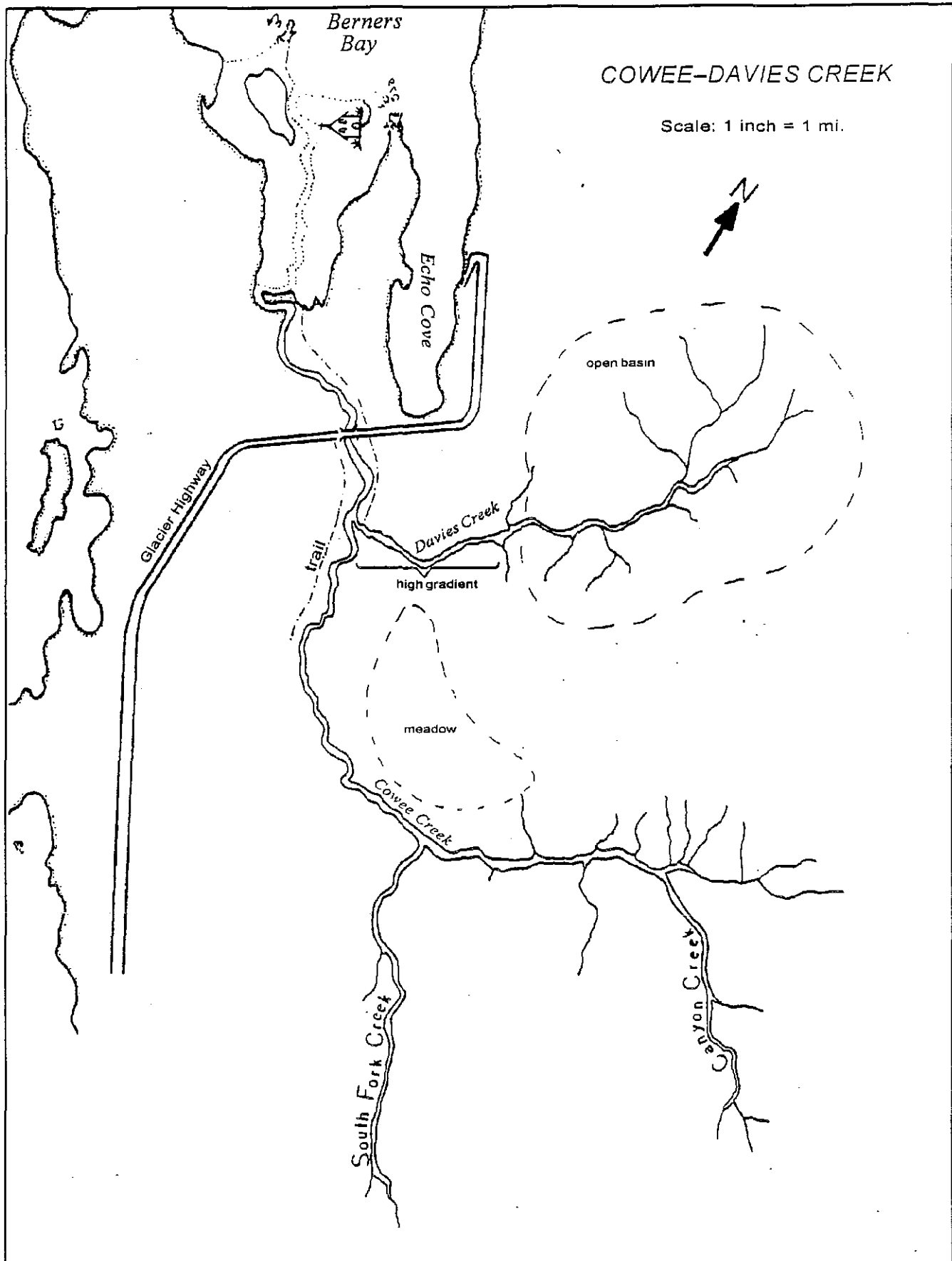


Figure 12.1 Cowee-Davies Creek.

Fish Habitat

The mainstem of Cowee Creek has many pools and riffles throughout its length. The system has many log jams and eroding banks with overhanging brush. The bottom substrate is primarily gravel. Excellent spawning and rearing habitats are found throughout the stream.

Davies Creek, in the basin, has a low gradient, many pools and riffles, and excellent overhead and instream cover. Davies Creek has a steep gradient for approximately 0.75 mile as it descends from the basin. Large boulders, pools, and fast water in this area appear to be excellent rearing habitat for rainbow-steelhead trout. The water level of the Cowee-Davies system varies consider-

ably over the season because of its semi-glacial nature. Many small tributaries of Cowee and Davies Creeks are seasonally very important to fish production as they provide refuge and good rearing conditions when the mainstem is high and glacial. There are no barriers on Cowee or Davies Creeks.

Public Use

Cowee Creek is a popular location for sport fishing on the Juneau road system. The stream provides a remote setting and sufficient area for anglers to disperse and avoid the "shoulder to shoulder" situation which prevails at some other favorite local fishing holes. Sport fisheries at Echo Cove are probably based to a high degree on Cowee Creek stocks.

Steelhead are reportedly caught in both spring and fall at Cowee Creek; however, such harvests have not been documented.

Recreational fishing effort and harvest for Cowee Creek and Echo Cove are summarized in table 12.2. Estimated angler effort and catch for Cowee Creek, by season, are shown in tables 12.3 and 12.4.

Cowee Creek provides one of the better places to fish for wild coho salmon on the Juneau road system. A good trail parallels Cowee Creek from tide-water to about 2 miles upstream from the bridge.

The area is also used for waterfowl and big game hunting during hunting seasons.

Table 12.2 Recreational fishing effort and harvest at Cowee Creek compared to the total effort and harvest along the Juneau Roadside, April 17 to October 1, 1983.

CATCH	ECHO COVE		COWEE CREEK		TOTAL ROADSIDE FISHERY	
	No.	%	No.	%	No.	%
Dolly Varden	206	1.9	2,066	19.9	10,365	100
Coho salmon	0	0.0	1,196	42.2	2,829	100
Pink salmon	903	4.0	600	2.7	22,216	100
Chum salmon	0	0.0	14	5.9	235	100
Cutthroat trout	29	3.4	31	3.7	836	100
Total	1,138	3.1	3,907	10.7	36,481	100
Rod-hours	3,254	5.3	3,092	5.1	60,523	100

Table 12.3 Estimated angler effort and catches for Cowee Creek by seasonal period, 1987.

	20 APR 87- 21 JUN 87	22 JUN 87- 9 AUG 87	10 AUG 87- 13 SEP 87	14 SEP 87- 11 OCT 87	TOTAL
Rod-hours	487	2,473	890	1,221	5,071
Coho salmon kept	0	0	0	110	110
Coho salmon released	0	0	0	0	0
Jack or small coho kept	0	0	0	8	8
Jack or small coho released	0	0	0	44	44
Pink salmon kept	0	893	0	0	893
Pink salmon released	0	2,785	441	0	3,226
Chum salmon kept	0	300	0	0	300
Chum salmon released	0	343	0	0	343
Dolly Varden kept	0	120	264	93	477
Dolly Varden released	0	521	0	10	532

Table 12.4. Estimated angler effort and catches for Cowee Creek by biweekly period, 1988.

	5/07- 5/20	5/21- 6/03	6/04- 6/17	6/18- 7/01	7/02- 7/15	7/16- 7/29	7/30- 8/12	8/13- 8/26	8/27- 9/09	9/10- 9/23	9/24- 10/07	10/08- 10/21	Total
Estimated angler-hours of effort	8	41	28	176	267	492	277	295	473	731	154	98	3040
Large coho salmon (>16")													
Estimated catch	0	0	0	0	0	0	0	15	179	452	152	3	801
Estimated harvest	0	0	0	0	0	0	0	15	135	340	152	3	645
Small coho salmon (<16")													
Estimated catch	0	0	0	0	0	0	0	6	23	13	11	2	55
Estimated harvest	0	0	0	0	0	0	0	0	0	3	11	2	16
Pink salmon													
Estimated catch	0	0	0	0	85	1091	356	165	31	4	0	0	1732
Estimated harvest	0	0	0	0	33	589	319	31	18	4	0	0	1024
Chum salmon													
Estimated catch	0	0	0	0	0	5	23	6	4	0	0	0	38
Estimated harvest	0	0	0	0	0	5	0	0	0	0	0	0	5
Dolly Varden													
Estimated catch	0	0	0	132	226	88	0	5	40	45	5	0	541
Estimated harvest	0	0	0	108	153	53	0	5	18	32	5	0	374
Cutthroat trout													
Estimated catch	0	0	0	0	0	0	0	0	6	0	0	0	6
Estimated harvest	0	0	0	0	0	0	0	0	0	0	0	0	0

Public access from about 1 mile above the bridge to private property at the stream mouth presently occurs on U.S. Forest Service land.

Land Use

Cowee Creek has essentially recovered from construction of the Glacier Highway and an old road and bridge near the stream mouth. Logging and associated activities pose the greatest threat to the fishery habitat in the Cowee and Davies Creek drainages; both a native corporation and the U.S. Forest Service have proposed timber harvests in the area in the past.

Land Ownership

The mouth of Cowee Creek is in private ownership. However, there has been no problem with public access. From the private lands at the stream mouth to upstream above the bridge, the land is administered by the U.S. Forest Service.

Conclusion

Even though fishery values of this system have not been fully investigated, it is apparent that the Cowee-Davies system has extremely high value as a producer of fish and local fishing opportunities. Proposed logging activities in the watershed could have detrimental effects on both the fish and fisheries. Roading activities could have major impacts on the hydrology throughout the watershed.

Recommendations

It is recommended that logging not be conducted in the Cowee-Davies watershed by any agency. The fishery and recreational values of this system are too great to subject them to potential impact from logging.

Research should be conducted on this watershed to fully assess its fishery resources. The species and numbers of fish present, angler use, and the contribution of Cowee Creek stocks to northern Southeast fisheries should be determined. ■

Chapter 13

Cropley Lake

Anadromous Stream Catalog Number: none

Location: Lat. 58°15'50" N.
Long. 134°31'15" W.

Description

Cropley Lake is a small, alpine lake (approximately 15 acres) located at the 1,800-foot elevation at the headwaters of Fish Creek on Douglas Island (figure 13.1). There is a barrier to upstream fish movement directly below Cropley Lake.

This lake was used historically to provide water to the Treadwell ditch. The old dam at the outlet is still present.

Fish Species Present

Cropley Lake has a population of resident Dolly Varden. The Dolly Varden appear to be stunted—i.e., very small for their age. There are no fish stocking records for this system.

Fish Habitat

Habitat is typical of a small alpine lake with a short productive growing season. The lake shorelines are muskeg

with some large rocks. The bottom of the lake is primarily mud and large rock.

Sufficient spawning areas are available in the small inlets and spring areas for maintenance of the fish population.

Public Use

Cropley Lake is the only truly alpine lake available from the Juneau road system and is now included in the Eagle Crest Ski Area. The lake is accessible by a 1.8-mile-long trail which begins at the Eagle Crest Ski Lodge.

The lake receives light fishing pressure and is visited by numerous hikers every season. The fish are typically small (6-8 inches) but often numerous.

Land Ownership

Cropley Lake is located in the Tongass National Forest (U.S. Forest Service land).

Land Uses

Cropley Lake, until 1984, appeared to be very "natural," even though the outlet had historically been raised to store more water for use in the mines. In 1984, the outlet was raised farther and the lake became the source of water for the snow-making machine at Eagle Crest Ski Area. Visible development at the lake has detracted from the natural setting; however, water use is to be governed by stipulations issued to protect the fish and ensure that the lake is not drained below pre-1984 levels.

Conclusion

Cropley Lake provides a unique, remote, alpine angling opportunity.

Recommendations

Water withdrawal at Cropley Lake should be monitored to ensure that fish are not being adversely impacted. Water withdrawal and diversion should also be investigated to determine if it is impacting survival of eggs or fish in the anadromous section of lower Fish Creek. ■

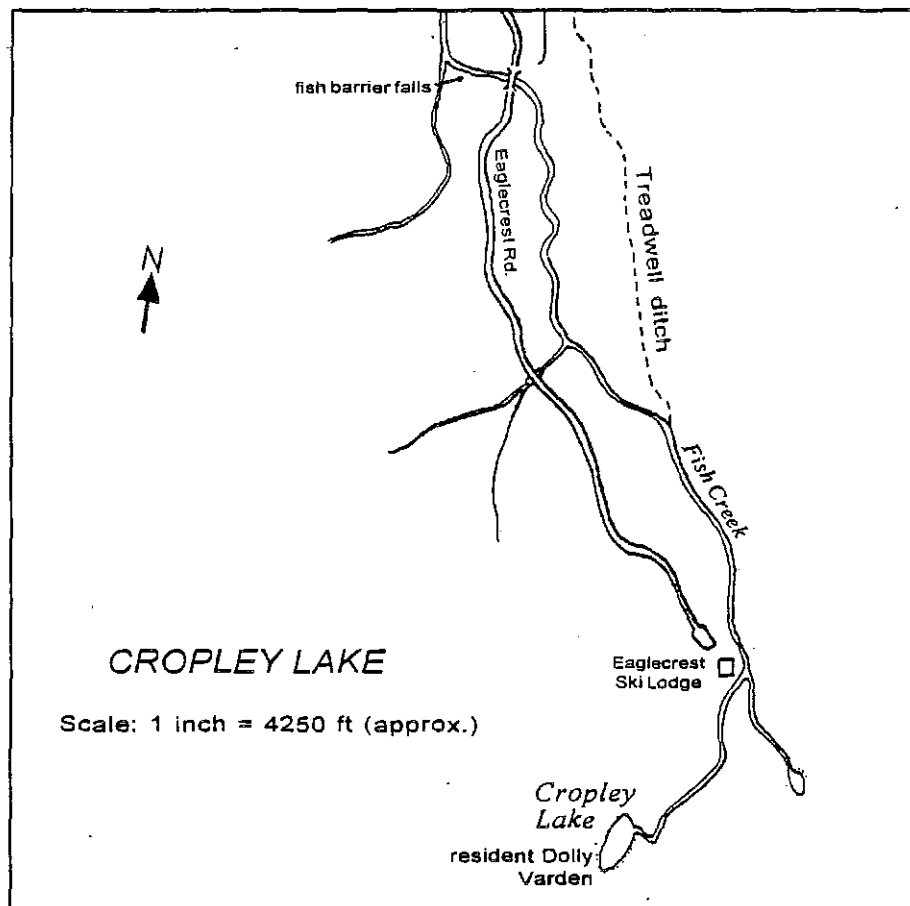


Figure 13.1 Cropley Lake.

Chapter 14

Crossbay Creek

Anadromous Stream Catalog Number: none

Location: Lat. 58°15'50" N.
Long. 134°31'15" W.
(2.2 mile Thane Road)

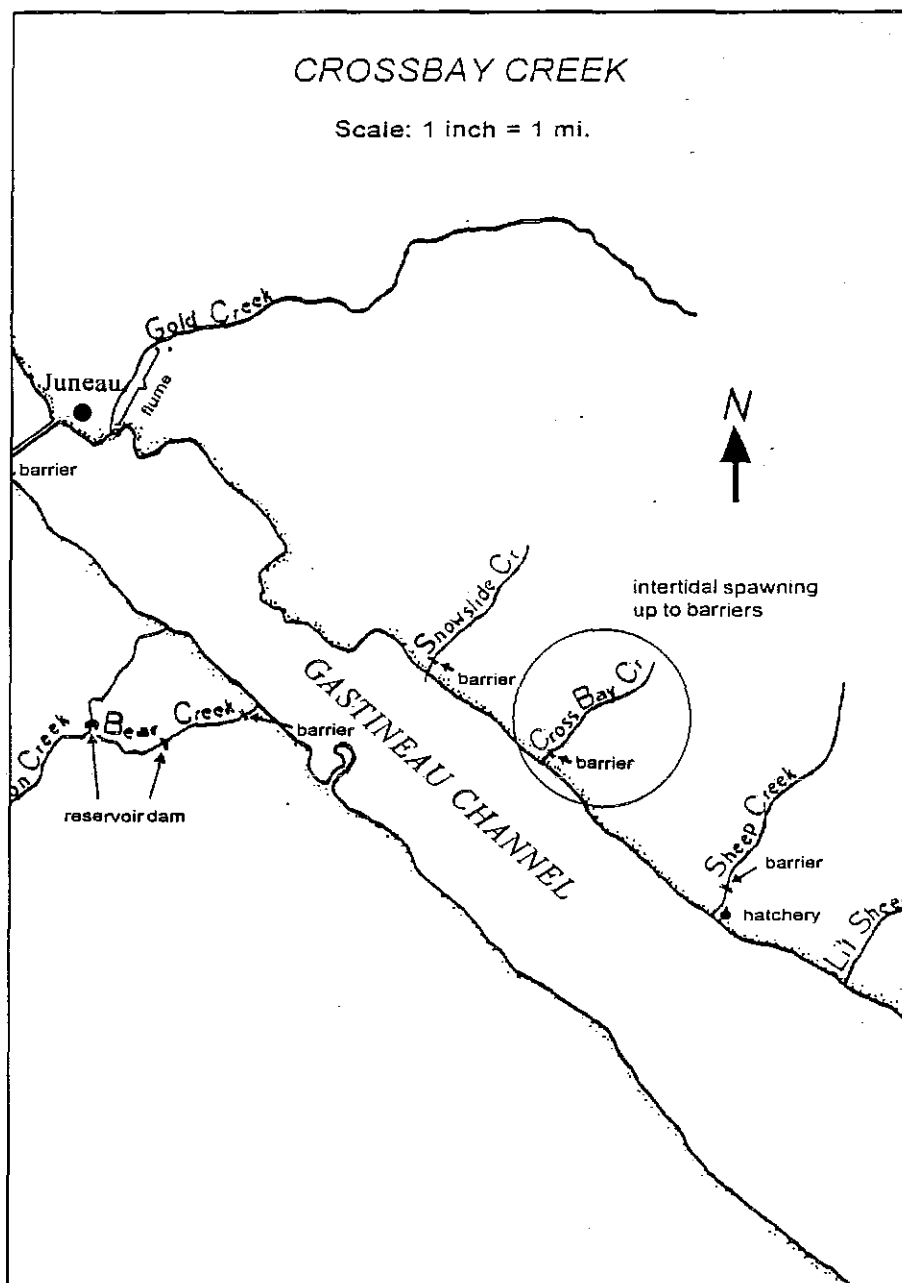


Figure 14.1 Crossbay Creek.

Description

Crossbay Creek flows nearly vertically down the face of Gastineau peak and into Gastineau Channel (figure 14.1). It is crossed by Thane Road at mile 2.2. The entire stream consists of either extremely steep gradient or falls.

Fish Species Present

Unknown.

Fish Habitat

Crossbay Creek has essentially no fish habitat values. The intertidal area could be used for spawning by non-rearing species, such as pink and chum salmon, but this has not been documented.

Public Use

There is no documented public use of Crossbay Creek.

Land Ownership

Crossbay Creek is on Bureau of Land Management property.

Land Uses

Historical and current land uses which may have impacted this system are unknown.

Conclusion

Crossbay Creek has essentially no fishery values. A small amount of intertidal spawning habitat may be present.

Recommendations

The water quality of this stream should be maintained because of the possible negative impacts it could have on the intertidal area in Gastineau Channel. ■

Chapter 15

Duck Creek

Anadromous Catalog Number:
111-50-10500-2002

Location: Lat. 58°21'33" N.
Long. 134°35'52" W.
(directly W of intersection at Egan Dr. and Loop Rd.)

Description

Duck Creek runs approximately 3½ miles in a southerly direction through the middle of the Mendenhall Valley. It enters the Mendenhall River directly upstream from the Juneau municipal airport runway (figure 15.1). The stream measures from 5 to 15 feet in width and from six inches to 2 feet in depth. The stream bed is essentially gravel and has been subjected to extensive gravel removal since historical times. Excavation has exposed iron deposits which often impart an orange color to the water.

Fish Species Present

Duck Creek has wild populations of pink, chum, and coho salmon, Dolly Varden and cutthroat trout. Historically, Duck Creek is reported to have had runs of up to 10,000 chum salmon. As late as

1966, the coho escapement was estimated to be 500 fish. In recent years, the water has been too discolored from iron sediment to conduct salmon escapement surveys.

Minnow trap catches in Duck Creek adjacent to Mendenhall Mall, May 14, 1984:

Trap	Coho		Dolly Varden	Cutthroat trout
	smolt ¹	fry		
1	26	0	0	2
2	16	1	0	1
3	15	1	1	0
4	55	0	2	0
5	14	0	0	3
Total	126	2	3	3

Over 100 coho smolt were observed around trap 1, and 75 or so coho smolt and 2 Dolly Varden were observed around trap 4.

Trap catches on January 14, 1985:

Trap	Coho		Dolly Varden	Cutthroat trout
	smolt ¹	fry		
1	12	2	1	0
2	1	4	0	0
3	10	32	0	0
4	4	29	0	0
5	4	17	0	0
Total	31	84	1	0

¹ Coho will smolt in spring 1985.

A summary of fish stocking is presented in table 15.1, and a summary of salmon escapement counts appears in table 15.2. Trapping data for rearing fish in Duck Creek are presented in table 15.3.

In April 1994, the National Marine Fisheries Service Auke Bay Laboratory investigated Duck Creek as part of a stream restoration project. An estimated 4,955 juvenile coho salmon were found to be rearing in the stream. Overwinter survival ranged from 79% in SuperBear Pond (just north of Egan Drive) to 39% in more upstream areas.

During spring 1994, 3,399 coho smolts were coded wire tagged as they left the stream. In fall 1994, 21 adult coho were counted in Duck Creek. Also trapped during the investigation were 235 Dolly Varden, 112 sockeye salmon juveniles, 24 cutthroat trout, 8 chum salmon fry, and 5 pink salmon fry.

...cont'd

Table 15.1. Stocking record for Duck Creek.

DATE	SPECIES	NUMBER	SIZE	BROOD SOURCE	HATCHERY	REMARKS
1919-20	coho	50,000	fry	—	—	
6/19/53	brook	3,100	—	—	—	
8/03/54	rainbow	1,000	fry	Kodiak C.C.	Auke Bay	
8/02/57	rainbow	11,000	—	Kodiak	Auke Creek	USF&WS
1958	rainbow	1,500	feeding fry	Kodiak	Auke Creek	
1959	rainbow	1,000	fry	Kodiak C.C.	Deer Mountain	
1960	rainbow	1,000	fry	Kodiak C.C.	Deer Mountain	
1960	rainbow	1,000	fry	Kodiak C.C.	Auke Bay	
5/05/77	coho	50,000	fry	Mendenhall	Crystal Lake	
5/11/77	coho	50,000	fry	Mendenhall	Crystal Lake	
5/17/77	coho	29,620	fry	Mendenhall	Crystal Lake	
5/31/84	coho	93,747	fry	Salmon Creek	Salmon Creek	NSRRA

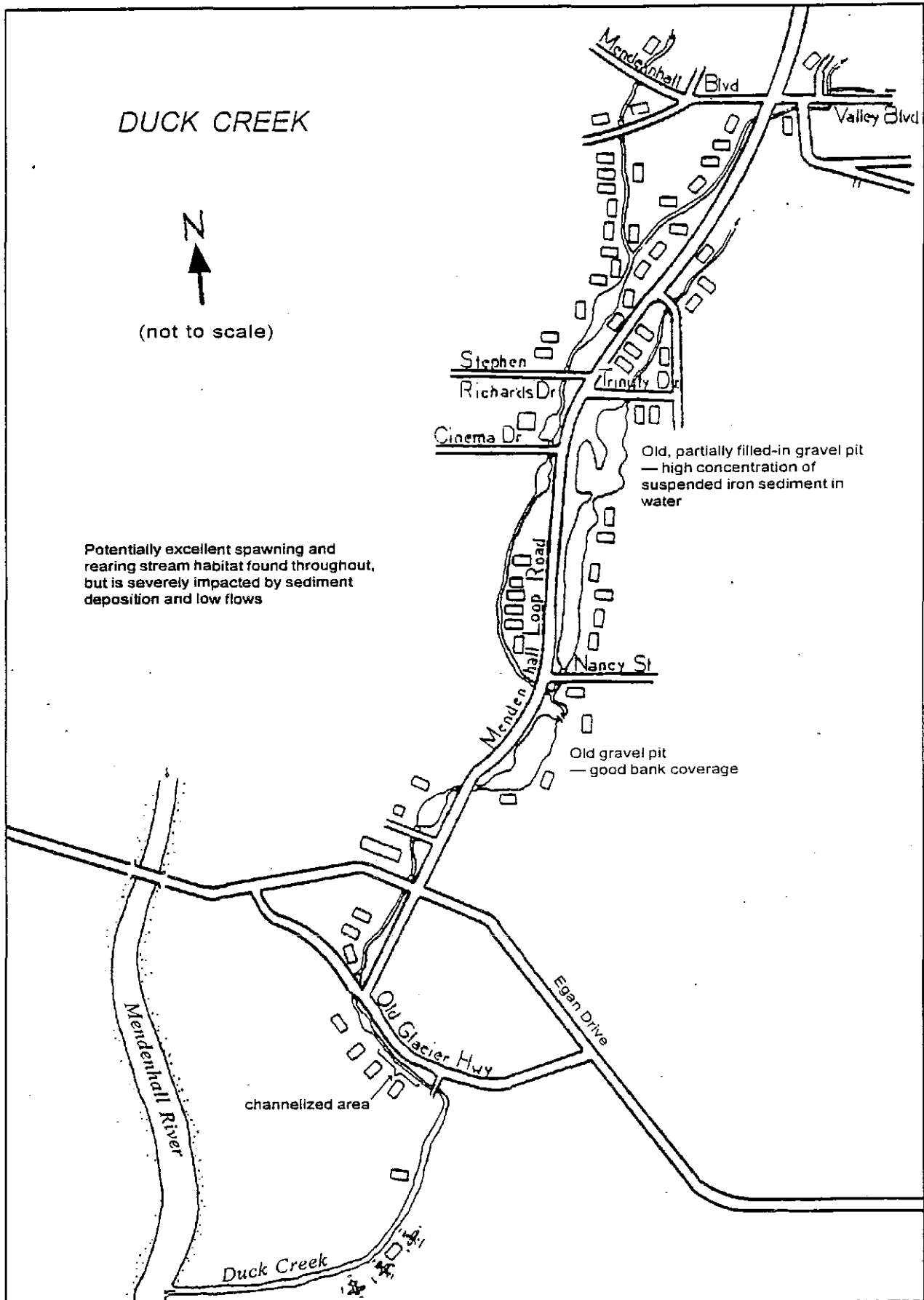


Figure 15.1 Duck Creek.

Fish Habitat

Duck Creek has been subjected to more physical land use impacts than any other stream in the Juneau area. Natural pools in the upper reaches have filled in with sediment from polluted streamside drainage. Other larger ponds which were gravel pits still provide some rearing habitat. Most of these ponds have good overhanging cover along the shorelines. Emergent vegetation has encroached into the mainstem channels. There are several good riffle areas located throughout the stream which provide spawning habitat.

In 1984, lower Duck Creek from Berners Avenue to Glacier Highway was 'channelized' as stipulated by this Department in response to a Title 16 permit application. This section of the creek, which often went dry during low flows, now contains a good channel and refuge pools which should reduce loss of fish except during exceptionally dry periods.

Public Use

Duck Creek originally served as a source of fish to be used as mink feed by fur farmers located in the Mendenhall Valley. Several thousand fish, presumably coho and chum salmon were taken from the stream annually.

Historically the creek is reported to have produced excellent trout fishing. The stream is presently closed to fishing; however, the stream banks receive considerable use by children from adjacent residential areas.

Land Use

Upper reaches of Duck Creek are bordered by small private residential lots. The lower section of the stream flows through larger commercial parcels and airport property owned by the City and Borough of Juneau.

Duck Creek is located in, and adjacent to, major areas of development in the Mendenhall Valley and has been subjected to many forms of habitat abuse.

Table 15.2. Salmon spawning escapement counts in Duck Creek, 1940-1993.

YEAR	COHO	PINK	CHUM
1940			10,000
1966	500 (...)		
1969	1 (...)		
1973	120 (...)		
1978	2 (10/15)		
1983	13 (11/08)	1 (...)	2 (...)
1986	18 (10/27)		
1987	17 (10/21)		
1989	3 (10/26)		
1990	13 (10/19)		
1992	80 (11/09)		
1993	21 (10/04)		

From historical times to the early 1970's the stream was used as a local source of gravel, with little regard for fishery values. Gravel excavation exposed iron deposits in the upper drainage, which seasonally give a nearly opaque orange color to the water and affect light penetration and productivity.

Streamside excavation and drainage from local residential developments have produced heavy loads of sediment that have filled in most pools in the stream.

Water withdrawal is believed to be a major problem for Duck Creek. Many residences in the Mendenhall Valley have wells which draw on this aquifer. These same homes are now hooked up to the CBJ sewer system which drains the valley through a pipe. This is believed to have an impact on water levels in valley streams.

The lower part of Duck Creek is often dry during extended warm, dry spells. Duck Creek has reportedly gone dry periodically even in historical days.

Many roads cross and parallel Duck Creek, which provides a source of sediment and other pollutants to the stream.

Conclusion

Duck Creek has suffered significantly from a multitude of land uses since historical times, but the stream still holds viable populations of fish. Major impacts from land use can now be prevented through the current permit application review process, and with

the development of the municipal water system, more water should be available for Duck Creek.

Duck Creek was identified many years ago as an excellent stream for a community involvement restoration project. In 1989, the ADF&G Sport Fish Division, in cooperation with the City and Borough of Juneau, cleared all the non-natural debris from Duck Creek. The stream's flow increased immediately and began to flush built-up sediment from the stream.

The Duck Creek restoration project was begun in fall 1993. The project is conducted by the National Marine Fisheries Service, Trout Unlimited, and other cooperators. The goal of the program is to assess the fish habitat and fish populations of Duck Creek and to work toward restoration of the stream.

Recommendations

It is recommended that an annual stream cleanup program be implemented on Duck Creek.

A major factor in the future viability of Duck Creek will be the amount of water available for stream flow. It will be necessary to maintain a stream flow sufficient for the prevention of dry-up and low dissolved oxygen levels, in order to stabilize the water temperature and to reduce the infiltration of iron sediment.

Table 15.3. Summary of minnow trap data for Duck Creek, 1975-1989.

DATE	TRAPS SET	COHO			DOLLY VARDEN			STICKLE- BACK	OTHER
		SMOLT	FRY	TOTAL	SMOLT	FRY	TOTAL		
6/01/75	6	1	0	1	1	3	4	45	...
6/09/75	6	1	0	1	4	13	17	12	...
6/20/75	6	6	77	83	1	25	26	115	...
6/27/75	6	5	82	87	0	0	0	145	...
6/30/75	5	3	69	72	0	2	2	65	...
7/12/75	5	8	68	76	--	1	1	33	...
7/15/75	4	0	101	101	0	0	0	15	...
8/02/75	4	3	96	99	0	0	0	70	...
8/04/75	4	1	164	165	0	0	0	24	...
8/12/75	4	8	103	111	0	0	0	60	...
8/20/75	4	1	152	153	0	0	0	16	...
8/28/75	4	4	130	134	0	0	0	46	...
9/03/75	4	3	112	115	0	0	0	37	...
5/14/84	5	...	...	128	3	...	...	...	3 ct
6/12/84	5	...	...	6	1	...	...	...	...
6/22/84	5	...	...	17	0	...	...	...	...
6/22/84	2	...	...	14	0	...	...	...	...
7/24/84	10	...	...	10	1	...	...	...	...
7/24/84	6	...	...	26	0	...	...	...	...
1/14/85	5	...	...	115	0	...	...	...	...
4/02/85	4	...	...	2	0	...	...	...	...
4/02/85	6	...	...	132	1	...	...	...	...
4/03/85	5	...	...	75	1	...	...	...	...
4/03/85	5	...	...	104	0	...	...	...	...
4/09/85	4	...	...	71	8	...	...	...	...
4/09/85	4	...	...	39	0	...	...	...	...
7/31/89	10	...	...	24	0	...	...	...	1 ct

Hydrologic analysis of the drainage and Mendenhall Valley should be conducted, to identify water sources that could be routed to Duck Creek.

Once water flow is assured, the stream bed should be cleaned to remove build-ups of sediment and to loosen up gravel. Stream restoration and annual stream maintenance could be provided by volunteer groups and community involvement.

Further detrimental impact to Duck Creek should be prevented through:

- (1) prevention of further sedimentation;
- (2) requiring the filtering of all drainage onto the stream;
- (3) maintenance of water quality;
- (4) provision of streamside greenbelts of at least 50 feet on each side of the stream.

Pools should be excavated in lower Duck Creek to provide refuge for fish during dry periods. Such pools and improved channels should be required as mitigation on Title 16 permits. Duck Creek downstream from Cinema Drive would benefit from such pools and channel improvements. ■

Chapter 16

Eagle Creek

Anadromous Stream Catalog Number:
111-40-10920

Location: Lat. 58°18'48" N.
Long. 134°27'27" W.
(2.4 mile North Douglas Highway)

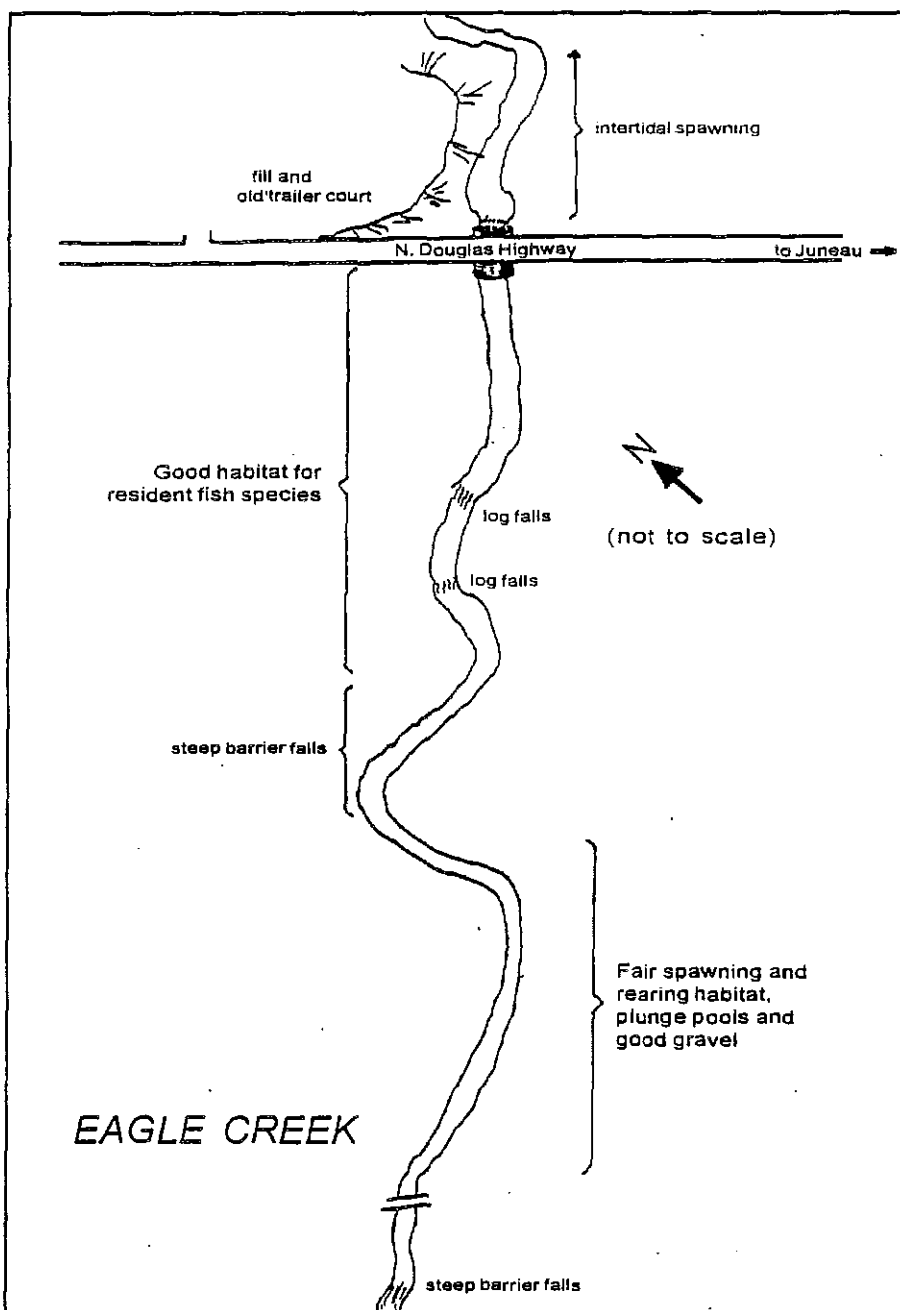


Figure 16.1 Eagle Creek.

Description

Eagle Creek, on Douglas Island, flows approximately 3 miles in a northerly direction and enters salt water in Gastineau Channel (figure 16.1).

The stream has a high gradient in the lower section and drains a watershed of approximately 3 square miles.

The stream cuts through a steep gorge above the North Douglas Highway. An upland muskeg is located upstream from the gorge. Downstream from the gorge, the stream is 12 to 20 feet wide and up to 3 feet deep in pools. The water is clear, with a brown tint during high flows.

Fish Species Present

Coho and pink salmon and Dolly Varden are present in Eagle Creek. The stream has not been stocked.

Minnow trap data and salmon escapement data for Eagle Creek are summarized below:

Eagle Creek minnow trap data

DATE	No. DOLLY		
	TRAPS	VARDEEN	COHO
08/16/70	2	5	1
08/16/85	2	17	4

Eagle Creek salmon escapement data

DATE	PINK	CHUM	COHO
08/16/84	840	-	-
10/23/84	-	-	14
08/04/85	192	8	-
1988	118	1	-
1989	-	-	-
1990	685	-	-
08/08/91	10	9	-
08/24/93	7	4	-
08/10/94	-	31	-
09/07/94	2182	-	-

Fish Habitat

Fish habitat is limited in Eagle Creek due to a barrier falls located about 0.1 mile above tidewater. Coho salmon and Dolly Varden spawn and rear upstream from the North Douglas Highway culvert. The water velocity is swift and rearing pools are few. Bank cover is provided by mature stands of spruce and hemlock.

Excellent rearing habitat is found above the barrier falls, and it is presumed that resident Dolly Varden and perhaps cutthroat trout are present. Small pockets of spawning gravel are found upstream from the highway and intertidal spawning habitat is found downstream from the highway.

Public Use

Eagle Creek receives little public use except at tidewater, where occasional

sport fishing has been observed. A good trail parallels the stream and is used mainly by deer and grouse hunters.

Land Ownership

The headwaters of Eagle Creek flow across U.S. Forest Service land, the middle section is on City and Borough of Juneau property, and private property bounds the stream in the lower section.

Land Uses

Eagle Creek was impacted by construction of the North Douglas Highway crossing and some fill of adjacent tidelands at the stream mouth. The stream has mostly recovered from these activities and is in an essentially natural condition upstream from the highway. A large gravel pit lies adjacent to Eagle Creek; however, the pit is presently not affecting the stream.

Water rights for 17,000 gallons per day are on file for Eagle Creek. Eagle Creek could be impacted by construction of the 'bench road' proposed by the City and Borough.

Conclusion

Eagle Creek has been subjected to some impacts from land use but is currently in a near-natural condition. The highest fish values are for production of non-rearing species, such as pink and chum salmon, in the anadromous section of the stream.

Recommendations

Current habitat values should be maintained through maintenance of water quality, provision of greenbelts, and critical review of land use applications. Further evaluation of the stream above the barrier should be done to assess fish populations. ■

Chapter 17

Eagle River

Anadromous Stream Catalog Number:
111-50-10070

Location: Lat. 58°31'20"N.
Long. 134°48'13"W.
(28.7 mile Glacier Highway)

Description

Eagle River originates from a lake at the base of the Eagle Glacier and flows about 5 miles across the forelands and into Lynn Canal (figure 17.1, next page).

The river has a high glacial content except from late fall to early spring. Thus, neither rearing nor spawning fish surveys have been conducted on the mainstem.

The river has at least 15 small clearwater tributaries and drains an area of approximately 26 square miles.

Fish Species Present

Eagle River is known to have populations of coho, pink, and chum salmon, Dolly Varden, and cutthroat trout. Eagle River is also reported to have been stocked with pink salmon eggs in 1919.

Fish Habitat

The mainstem, the mouths of the clearwater tributaries, and the tributaries themselves provide good rearing and spawning habitat. Fish populations and habitat of the mainstem have not been assessed due to the glacial water. The deep pools in Eagle River and perhaps Eagle Lake may be used for overwintering by Dolly Varden and cutthroat trout.

Boulder Creek is the largest tributary entering Eagle River on the north shore. It is located about 2 miles upstream from the Glacier Highway bridge. The stream flows approximately two miles and is from 6 to 10 feet in width and 4 to 8 inches deep. Two minnow traps set in Boulder Creek on August 26, 1970 caught 18 coho, 17 Dolly Varden, and an additional 14 rearing coho and 10 Dolly Varden were observed in the stream. cursory stream surveys conducted in 1970 on several other small tributaries entering Eagle River on the north shore showed that

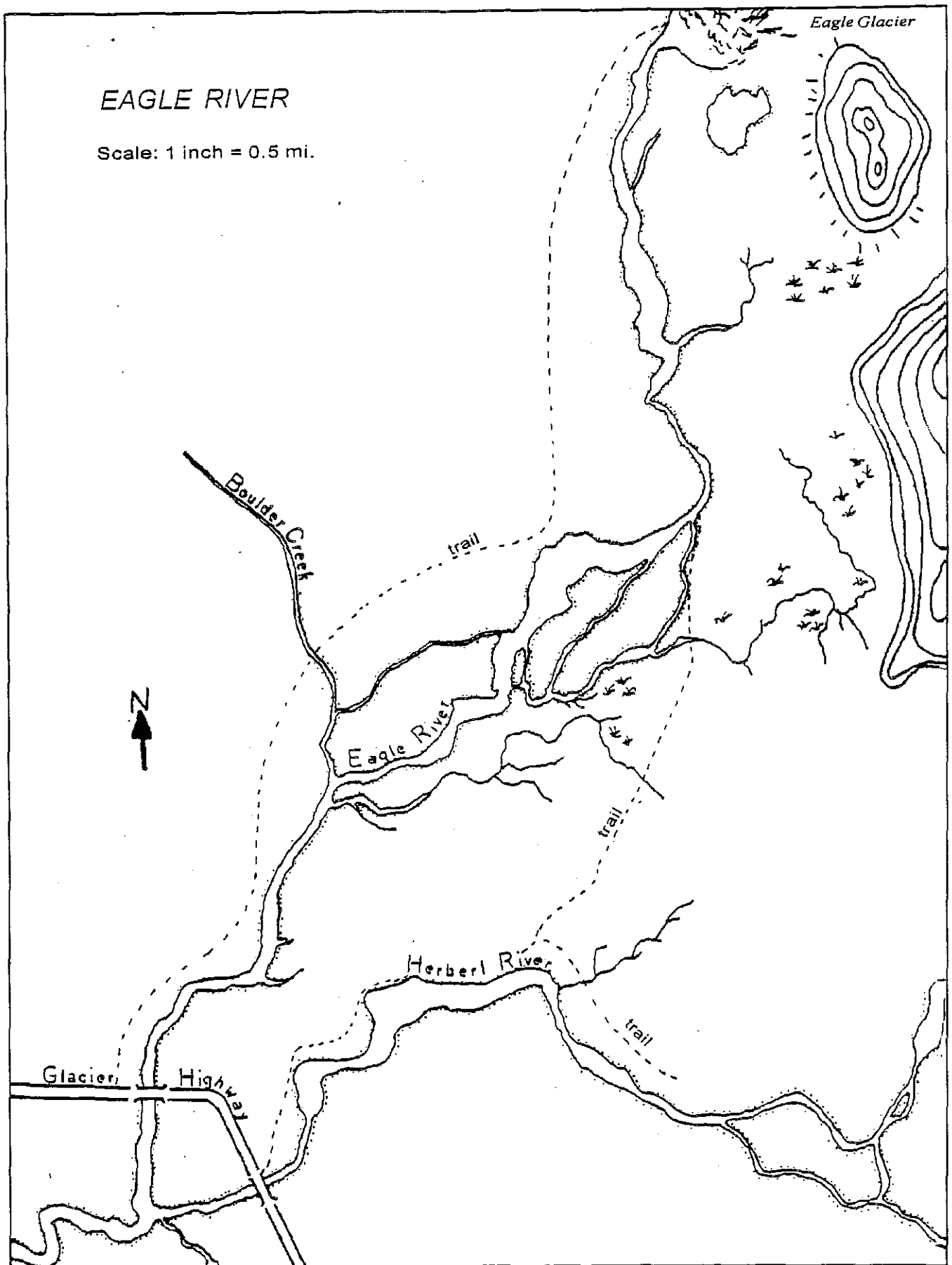


Figure 17.1 Eagle River.

most tributaries contained coho salmon and Dolly Varden.

Stream surveys have not been conducted on any tributaries entering Eagle River on the south shore.

Public Use

Eagle River has a good trail on the north shore that receives heavy public use. Recreational angling is conducted at the mouth of its clearwater tributaries (see map figure 17.1 on opposite page).

The magnitude of 'in-stream' angling pressure has not been quantified. Eagle River near salt water and the beach adjacent to the stream mouth have long been favorite locations for sport fishing.

A public picnic area situated on the north shore of the stream mouth receives heavy use. A Boy Scout Camp is operated on the south shore of Eagle River at its mouth.

Recreational angling effort and harvest data collected at Eagle Beach are presented below:

Eagle Beach harvest data		
YEAR	EFFORT	HARVEST
1970	76 angler-hours	66 fish (species unknown)
1983	365 angler-hours	366 DV 33 coho 33 cod

Eagle River Beach is a large area and provides ample space for anglers to spread out and avoid 'crowded' conditions that exist at some popular fishing spots.

Land Ownership

Eagle River is located primarily on U.S. Forest Service property; however, there are small private holdings near Glacier Highway. The property on the south side of Eagle River near the mouth belongs to the Boy Scouts of America.

Land Uses

In the past, Eagle River has been impacted in the stream and on the flood plain by gravel removal, but gravel is not currently being mined in the system.

The Eagle River drainage is managed by the USFS, and will be managed in a roadless state for dispersed public activities. Roads or concentrated recreational development are not anticipated. Eagle River has been identified as a potential future source of gravel.

Conclusion

Eagle River is one of the largest drainages in the Juneau area and has very high habitat values. The area receives a high level of public use.

Recommendations

The current habitat values of Eagle River should be maintained. Gravel mining should not be permitted in the stream or anywhere in the flood plain where fishery resources may be impacted.

Upwelling areas have been identified in the moraine in front of Eagle Glacier. These should be investigated to determine their potential for use in fish habitat enhancement. Fishery resources in the Eagle River mainstem and tributaries should be investigated to identify fish species present and numbers of rearing and spawning fish using the area. ■

Chapter 18

East Creek (unofficial name)

Anadromous Stream Catalog Number:
111-40-10060

Location: Lat. 58°21'29" N.
Long. 134°31'10" W.
(6.5 mile Glacier Highway)

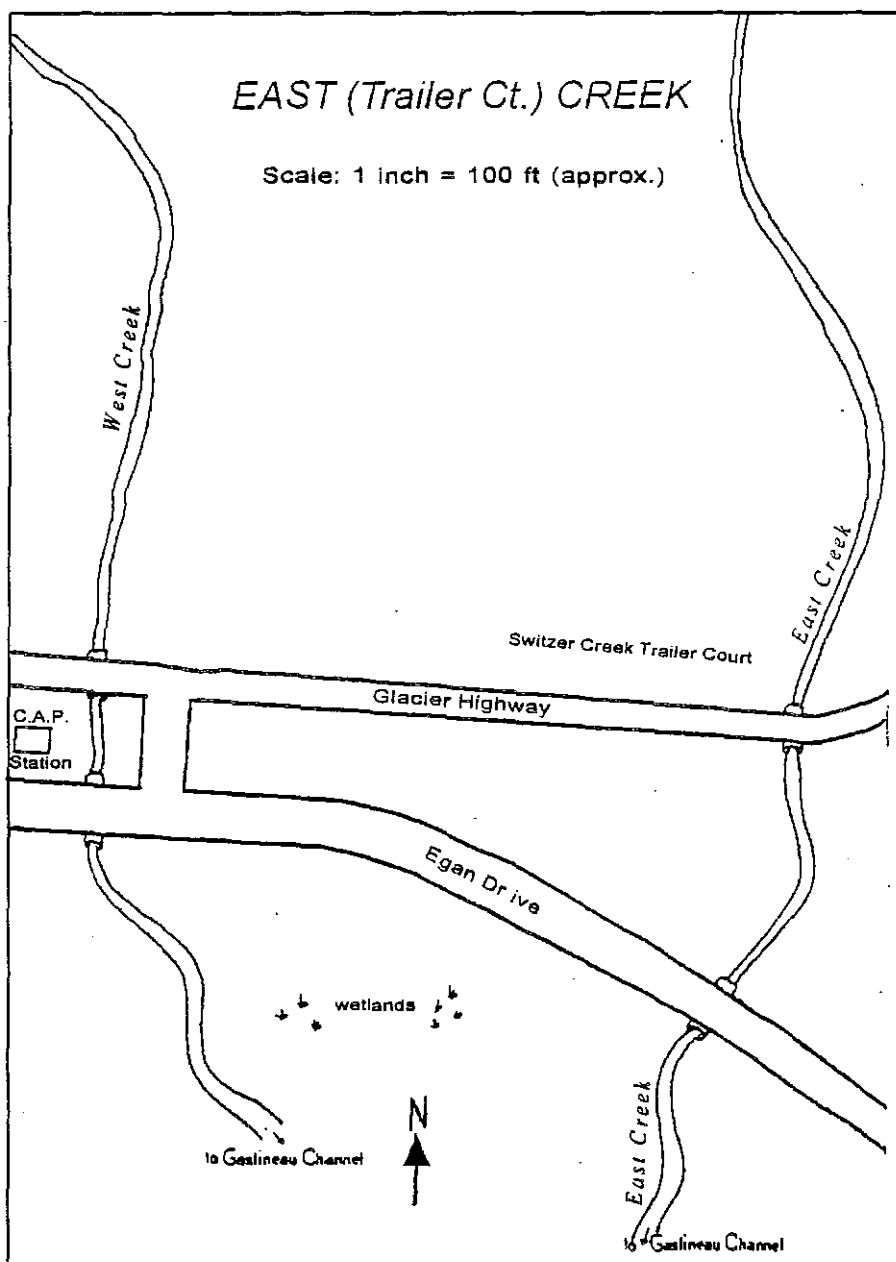


Figure 18.1 East Creek.

Description

This small stream flows approximately 1½ miles in a southerly direction off the south side of Thunder Mountain before entering Gastineau Channel east of Sunny Point. It is the easternmost of two small streams flowing through Switzer Creek Trailer Court (fig. 18.1).

The stream drains a watershed of approximately 1 square mile. It averages 5 feet in width and is 2 to 8 inches deep. The middle and upper reaches of the stream flow quite fast. The water is clear.

Fish Species Present

East Creek has populations of coho and pink salmon and Dolly Varden. Four minnow traps that were fished in the stream on August 19, 1970, caught 16 Dolly Varden and 5 coho salmon. An additional 12 juvenile salmonids were observed in the stream.

In August 1985, 12 adult pink salmon were observed in the stream near the highway. In the past, adult coho salmon have been observed in the stream; however, this escapement data is not available.

East Creek has not been stocked.

Fish Habitat

Pink salmon are known to spawn in the intertidal areas of East Creek and upstream to the Old Glacier Highway. Coho salmon spawn in small pockets of substrate in the upper stream areas.

The stream flows quite fast with few protected areas, resulting in low rearing potential.

The long intertidal area provides an excellent nursery for juvenile marine fish species. There are no known fish barriers on the stream; however, a small falls at ¼ mile could be a barrier at some water levels.

Public Use

East Creek flows through the largest trailer court in the Juneau area. Thus, the stream provides a good area for children to play and explore. The stream is not known to provide any sport fishing opportunity.

Land Ownership

East Creek heads on U.S. Forest Service property, then flows through private property, and finally through the Mendenhall Wetlands State Game Refuge (downstream from Egan Drive).

Land Uses

East Creek has been impacted by two major road crossings, Egan Drive and Glacier Highway. The stream has gener-

ally recovered from the impacts of the road crossings. Private developments and streets in the trailer court are located adjacent to the stream and could be impacting water quality and fish habitat values.

Conclusions

East Creek is a small creek with low overall fish values. The small stream is very accessible and provides a neighborhood opportunity for stream and nature

study. The fish habitat values of the stream could probably be improved through stream enhancement.

Recommendations

The water quality and fish habitat values of the stream should be maintained through critical review of land use permit applications.

The feasibility of implementing fish habitat improvements should be determined. ■

Chapter 19

Elevenmile Creek

Anadromous Stream Catalog Number: none

Location: Lat. 58°19'10" N.

Long. 134°38'30" W.

(11 mile North Douglas Highway)

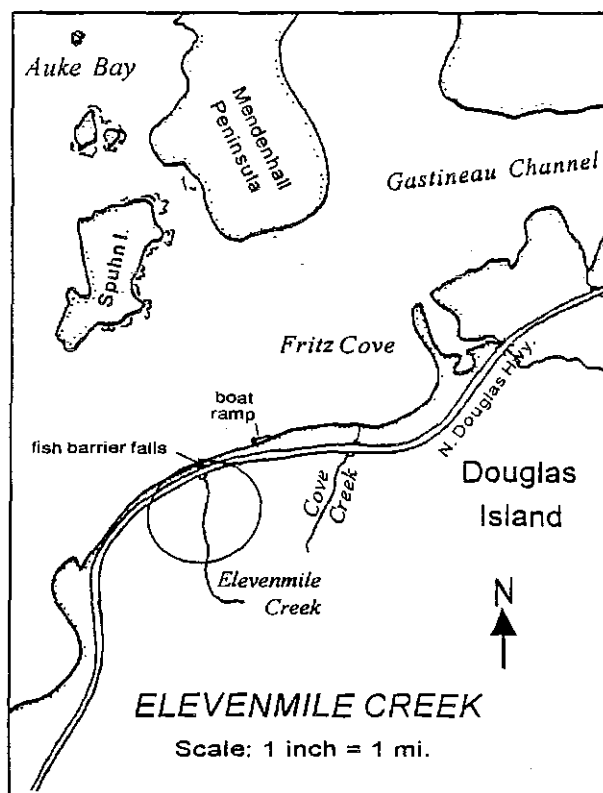


Figure 19.1 Elevenmile Creek.

Description

Located on Douglas Island, Elevenmile Creek flows about 1 mile, drains an area of more than 1 square mile, and empties into the south side of Fritz Cove. A barrier falls is located at tidewater.

Fish Species

The stream has not been surveyed to assess its fishery values above the barrier falls because of its size. The stream is very small but may have a population of resident Dolly Varden in its upper reaches. Pink salmon destined for other Fritz Cove streams have been observed to school off the stream mouth, but spawning at the creek mouth has not been documented.

Fish Habitat

Not surveyed.

Public Use

None.

Land Ownership

USFS land.

Land Uses

Elevenmile Creek is crossed by North Douglas Highway, but this crossing probably had little effect on the stream's habitat values, due to a barrier falls at the mouth of the stream. Upstream from the highway, Elevenmile Creek is in a natural condition.

Conclusion

Elevenmile Creek is a small, clearwater stream which has not been surveyed for fishery values. The creek mouth is ideally located for a saltwater imprinting/release site for hatchery-reared salmon smolts.

Recommendations

The water quality of the stream should be maintained because of the impact it could have on Fritz Cove. The water flow of Elevenmile Creek and the offshore topography should be investigated to determine potential for use as a saltwater release site for hatchery-reared salmon smolts. ■

Chapter 20

Falls Creek

Anadromous Stream Catalog Number:
111-40-10940

Location: Lat. 58°19'27" N.
Long. 134°28'47" W.
(3.5 mile North Douglas Highway)

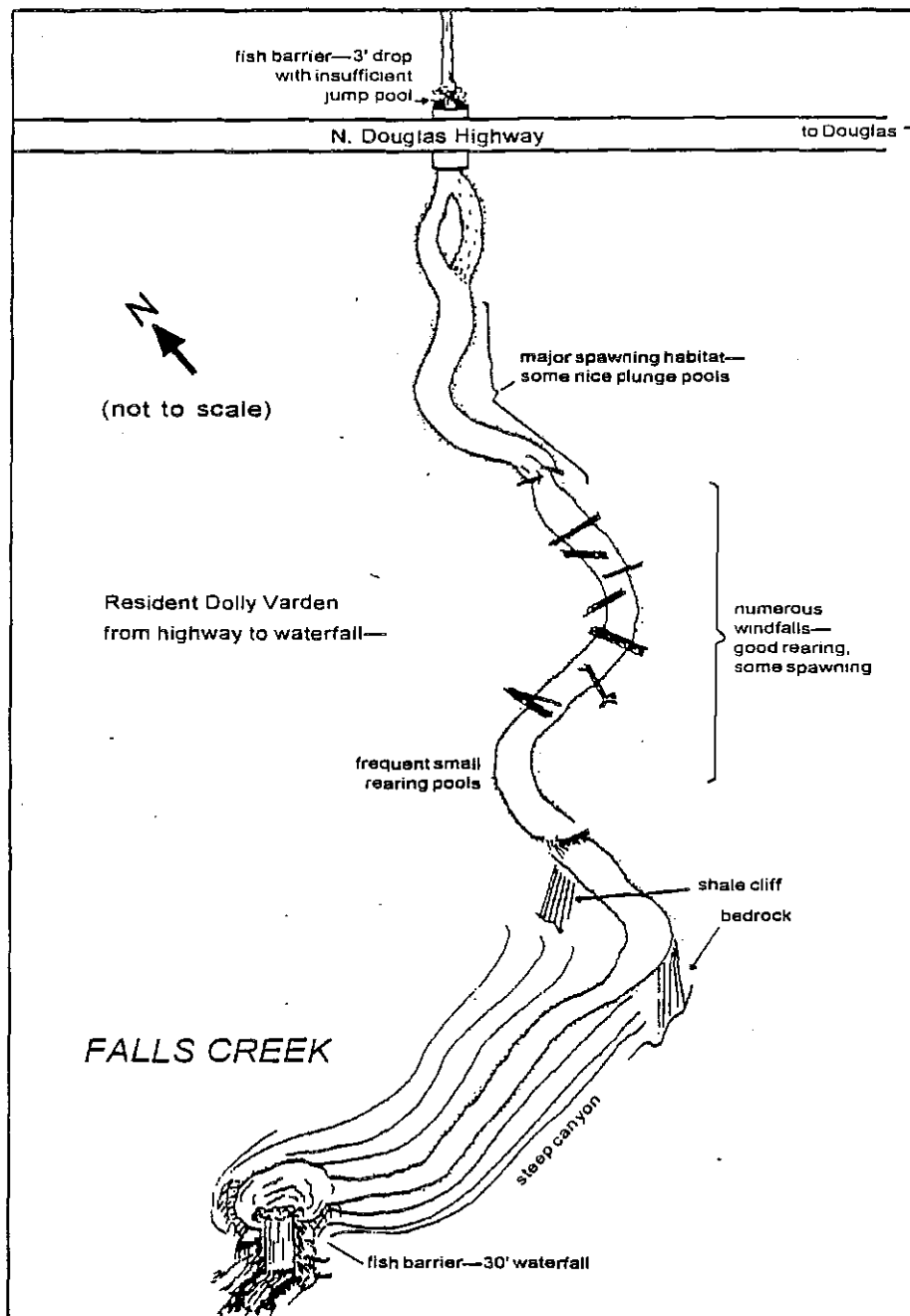


Figure 20.1 Falls Creek.

Description

Falls Creek is 5–12 feet wide, 6–12 inches deep, and flows for about 2 miles on Douglas Island. It enters Gastineau Channel at 3.5 mile North Douglas Highway (figure 20.1). The creek drains an area of over 1 square mile and has a steep gradient. The water color is clear with a brown tint.

Fish Species Present

Falls Creek contains populations of Dolly Varden and cutthroat trout.

Minnow trap data for Falls Creek are summarized below:

Falls Creek minnow trap data			
DATE	NO. OF TRAPS	DOLLY VARDEN	CUTTHROAT TROUT
06/26/70	3	15	2
08/22/84	5	28	0

Fish Habitat

Most of the spawning and rearing areas are located from tidewater up to the culvert that crosses under the North Douglas Highway. Limited spawning habitat is located upstream from the highway.

Rearing habitat upstream from the highway is limited due to the steep gradient and fast water. A 3- to 5-foot drop at the lower end of the highway culvert and small falls about 200 yards above the highway are probably barriers to fish at certain water levels. Intertidal spawning has not been documented at Falls Creek.

Public Use

None documented.

Land Ownership

The headwaters of Falls Creek are located in the Tongass National Forest. Its middle reaches lie on City and Borough of Juneau property and private property adjacent to Douglas Highway.

The tidelands are part of the Mendenhall Wetlands State Game Refuge.

Land Uses

Falls Creek has been impacted by the construction of North Douglas Highway, as the culvert was not properly installed and acts as a barrier to fish passage at certain water levels. Falls Creek could be impacted by the 'bench road' proposed to be constructed

through the stream's headwaters by the City and Borough of Juneau.

Conclusion

Falls Creek is a small stream with limited fishery values, mainly because of its steep gradient and existing fish barriers.

Recommendations

The water quality of the stream should be maintained because of the potential impacts it could have on Gastineau Channel. The intertidal area should be investigated to determine its potential for enhancement of spawning habitat. ■

Chapter 21

Fish Creek

Anadromous Stream Catalog Number:
111-50-10690

Location: Lat. 58°19'51" N.
Long. 134°35'39"W.
(8.3 mile North Douglas Highway)

Description

Fish Creek originates from Cropley Lake on north Douglas Island. It flows approximately 6 miles, drains a watershed of about 14 square miles, and enters salt water on the south side of Fritz Cove (fig. 21.1, following page). The stream has a fairly steep gradient, but there are numerous pools in the first 2½ miles above tidewater. The lower ¼ mile, located downstream from North Douglas Highway, is intertidal.

Three tributary streams feed into Fish Creek. The first tributary is located just above the highway and is about 300 feet long. It is slough-like with a silty iron-colored mud bottom. The second tributary is about 1¼ miles upstream and has a fish barrier 25 feet upstream from Fish Creek. Water in Fish Creek is nearly crystal clear.

Fish Species Present

Fish Creek has populations of coho, pink, and chum salmon, Dolly Varden and cutthroat and rainbow trout. Since

and also provided new shore-based king and coho fisheries at Fish Creek for Juneau anglers.

Six minnow traps set on June 22, 1970, caught 10 coho salmon and 19 Dolly Varden. An additional 84 coho fry were observed in the stream. Fish Creek is a major producer of local pink and chum salmon. Table 21.2 shows an extensive record of salmon escape-ments.

Fish Habitat

1986, the old gravel pit which is connected to Fish Creek has been used as a release site for king and coho smolts released in the Juneau sportfishing enhancement program (table 21.1). Fish released from Fish Creek have contributed well to local marine sport fisheries

Fish Creek is primarily a spawning stream for pink and chum salmon, with limited rearing habitat in pools. The lower 2½ miles of the streambed is gravel of varying sizes. Excellent spawning habitat exists from the stream mouth upstream for ¼ mile and is used extensively by pink and chum salmon.

Table 21.1. Summary of hatchery-reared coho and chinook salmon salmon smolt released at Fish Creek, 1986–1994.

YEAR	NUMBER OF KING SALMON	NUMBER OF COHO SALMON
1986	60,272	0
1987	62,501	53,000
1988	74,000	50,000
1989	67,000	42,000
1990	149,472	47,000
1991	150,246	0
1992	285,719	0
1993	164,998	0
1994	143,000	0
Total	1,157,208	192,000

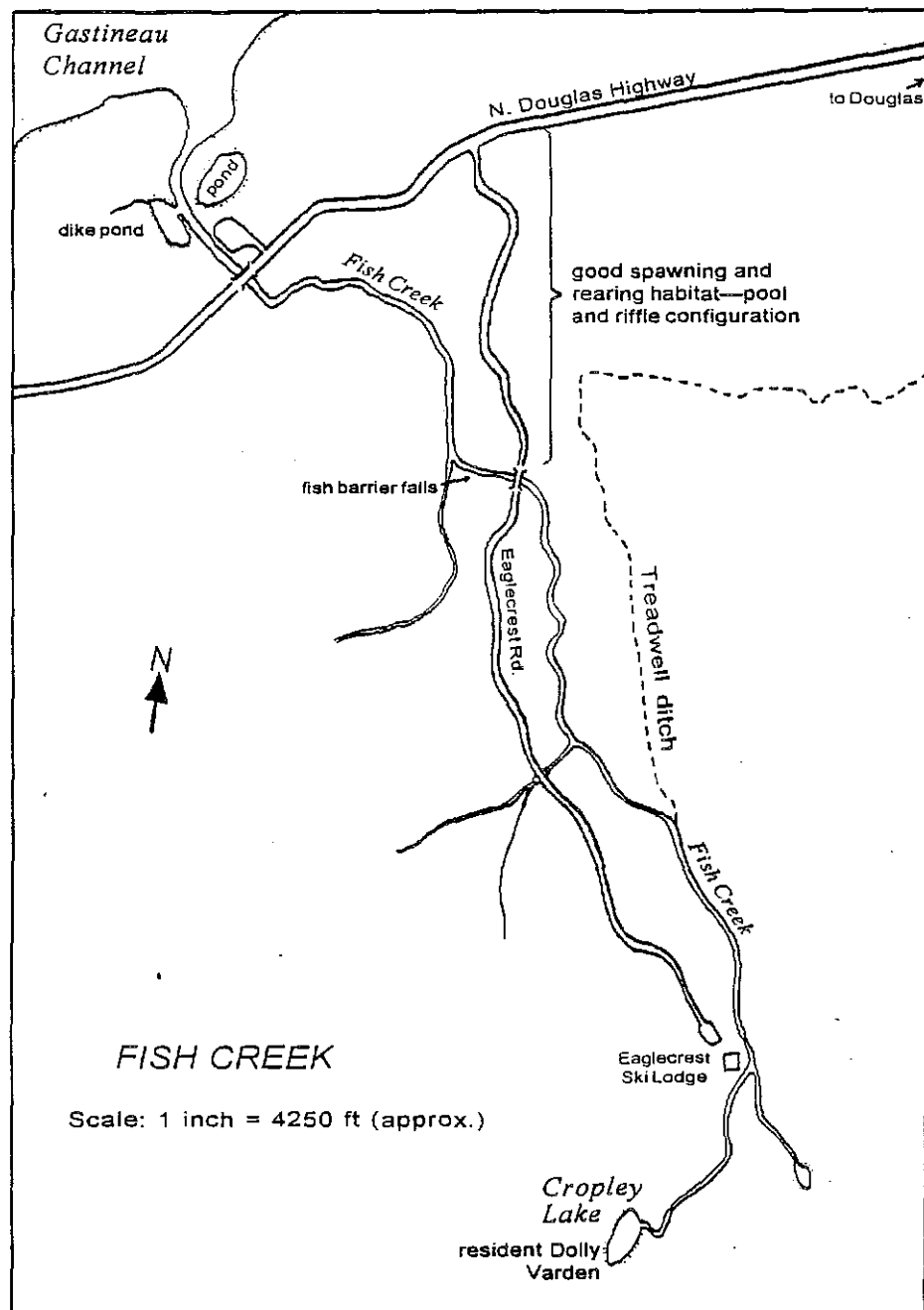


Figure 21.1 Fish Creek.

Good spawning habitat is interspersed between pools throughout the next 2½ miles upstream. Good rearing habitat is located in large pools. Logs and trees provide some overhead and instream cover.

There is a narrow gorge 3 miles upstream and a series of rapids which are a barrier to upstream migration. Good habitat for resident species exists above the barrier.

Public Use

Fish Creek has been a favorite fishing location of local anglers since access was provided by the North Douglas Highway. The stream supports one of the largest freshwater fisheries in the immediate Juneau area. A good trail parallels the stream for about 3 miles and provides excellent angler access.

Fish bound for Fish Creek are also taken by anglers fishing along the shores

of Fritz Cove. Recreational angling and catch data for the Fish Creek sport fishery are presented in table 21.3.

Land Ownership

Fish Creek originates from Cropley Lake, located on the Tongass National Forest. The lower reaches of Fish Creek are located on Juneau City and Borough property.

Land Uses

Both banks of Fish Creek downstream from the highway were impacted by land use activities associated with the construction of the North Douglas Highway in the early 1970's. The area was used for a construction base—i.e., rock crusher, batch plant, and gravel source. A portion of the intertidal area was filled in. The stream has essentially recovered from effects of the construction.

From 1974 to 1976, a road was constructed through the drainage to access the Eagle Crest ski area. Sediment from road fill was known to have drained into the creek. In 1984, a snowmaking machine was installed at Eagle Crest. The machine draws water from Cropley Lake; this does not remove water from the drainage, but diverts it from the stream for a period of time. During periods of low precipitation, water use at Cropley Lake could easily impact the survival of eggs deposited in lower sections of Fish Creek.

Fish Creek could be subjected to further development of recreational facilities and road improvement. Future development of industrial areas on North Douglas Island could also negatively impact fishery values.

Conclusion

Fish Creek provides one of the largest freshwater fisheries (based on wild fish stocks) on the Juneau road system. The system has essentially recovered from impacts of past land use activities; however, it could be subjected to detrimental land uses in the future.

Recommendations

Fish Creek's tremendous fish values, excellent public access, and high public use warrant the highest level of habitat protection. Ideally, the Fish Creek system should be designated as a top priority fish stream, and fish production and public use would be the top priority use for the system. All other proposed land uses in the area should be given very critical review to ensure that fishery and recreational values are not affected.

Investigations should be conducted to determine if water withdrawal at Cropley Lake is having any detrimental effects on stream flows in lower Fish Creek during dry winter months. Water quality should be maintained at all times. All developments in the system should be located away from the stream to prevent direct impacts.

Fish Creek provides one of the best opportunities in the Juneau area for fishery enhancement. It is used as an imprint and release site for hatchery-reared king and coho salmon smolt.

Salmon returning to Fish Creek pass through ongoing commercial fisheries in outer areas and 'home in' on the Outer Point-Fritz Cove areas, where they are available for some length of time to the marine sport fishery. Upon returning to Fish Creek, salmon are available to shore-based fishermen in the lower 2½ miles of stream, which has excellent public access. ■

Table 21.2. Salmon escapement data for Fish Creek, 1960-1994.

YEAR	PINK	CHUM	COHO	KING
1960	500 (08/10)	1,010 (08/10)	-	-
1961	801 (07/25)	-	-	-
1962	500 (08/06)	1,500 (08/06)	-	-
1963	-	-	-	-
1964	946 (09/03)	107 (09/03)	-	-
1965	600 (08/20)	800 (08/20)	-	-
1966	6,908 (08/08)	1,219 (08/08)	-	-
1967	750 (08/09)	4,500 (08/07)	-	-
1968	6,000 (08/14)	245 (08/27)	-	-
1969	10,500 (08/25)	1,200 (08/27)	-	-
1970	28,000 (08/18)	150 (08/18)	-	-
1971	2,330 (08/30)	130 (08/30)	-	-
1972	500 (08/23)	3,000 (07/31)	-	-
1973	6,000 (07/17)	1,500 (07/17)	-	-
1974	2,000 (08/07)	1,200 (08/07)	-	-
1975	935 (08/04)	185 (08/04)	-	-
1976	500 (08/25)	1,342 (08/05)	-	-
1977	6,500 (08/04)	850 (08/04)	-	-
1978	627 (08/03)	1,366 (07/25)	39 (10/16)	-
1979	13,166 (08/29)	1,360 (08/08)	31 (10/31)	-
1980	5,244 (08/22)	3,200 (08/05)	-	-
1981	5,303 (07/28)	1,200 (07/28)	2 (11/02)	-
1982	9,450 (08/17)	1,219 (08/02)	1 (10/25)	-
1983	16,280 (08/08)	1,466 (08/08)	7 (11/03)	-
1984	320 (08/03)	3,380 (08/03)	50 (10/17)	-
1985	56,140 (08/19)	5,366 (08/08)	31 (10/28)	-
1986	1,006 (08/08)	2,047 (08/08)	0 (10/28)	-
1987	28,260 (08/17)	281 (08/04)	0 (10/13)	-
1988	2,651 (08/12)	609 (08/12)	66 (10/16)	-
1989	5,363 (08/08)	1,187 (07/23)	237 (11/05)	2 (08/18)
1990	37,612 (08/27)	1,486 (07/27)	-	80 (08/27)
1991	3,832 (08/29)	2,194 (08/13)	244 (10/22)	1 (08/13)
1992	10,478 (08/26)	1,839 (08/11)	15 (10/17)	117 (08/26)
1993	540 (08/31)	639 (07/28)	-	356 (07/21)
1994	14,386 (09/08)	3,943 (08/03)	-	196 (09/01)

Table 21.3. Recreational fishing effort and harvest data for Fish Creek, 1979-1994.

	1979 5/1-9/3	1980 6/1-8/31	1983 4/19-9/29	1986 6/7-9/29	1987 4/20-10/11	1988 9/12-10/23	1989 6/19-8/27	1990	1991 6/24-10/14	1993	1994
Angler hours	4,152	3,113	1,687	1,226	1,835	83	3,196	4,951	7,941	-	-
HARVEST											
Pink salmon	2,479	627	1,252	335	1,864	0	2,054	1,403	459	-	-
Chum salmon	-	-	92	23	-	-	-	-	124	-	-
King salmon	-	-	-	0	0	0	437	137	274	81	92
Coho salmon	-	-	-	28	0	31	1,365	1,405	1,276	-	-
Dolly Varden	-	-	696	391	1,418	327	509	44	352	-	-
Cutthroat trout	-	-	-	167	0	0	47	64	43	-	-

Chapter 22

Float Plane Lake

Anadromous Steam Catalog Number: None

**Location: Lat. 58°21'15" N.
Long. 134°35'00" W.
(alongside runway at Juneau Airport)**

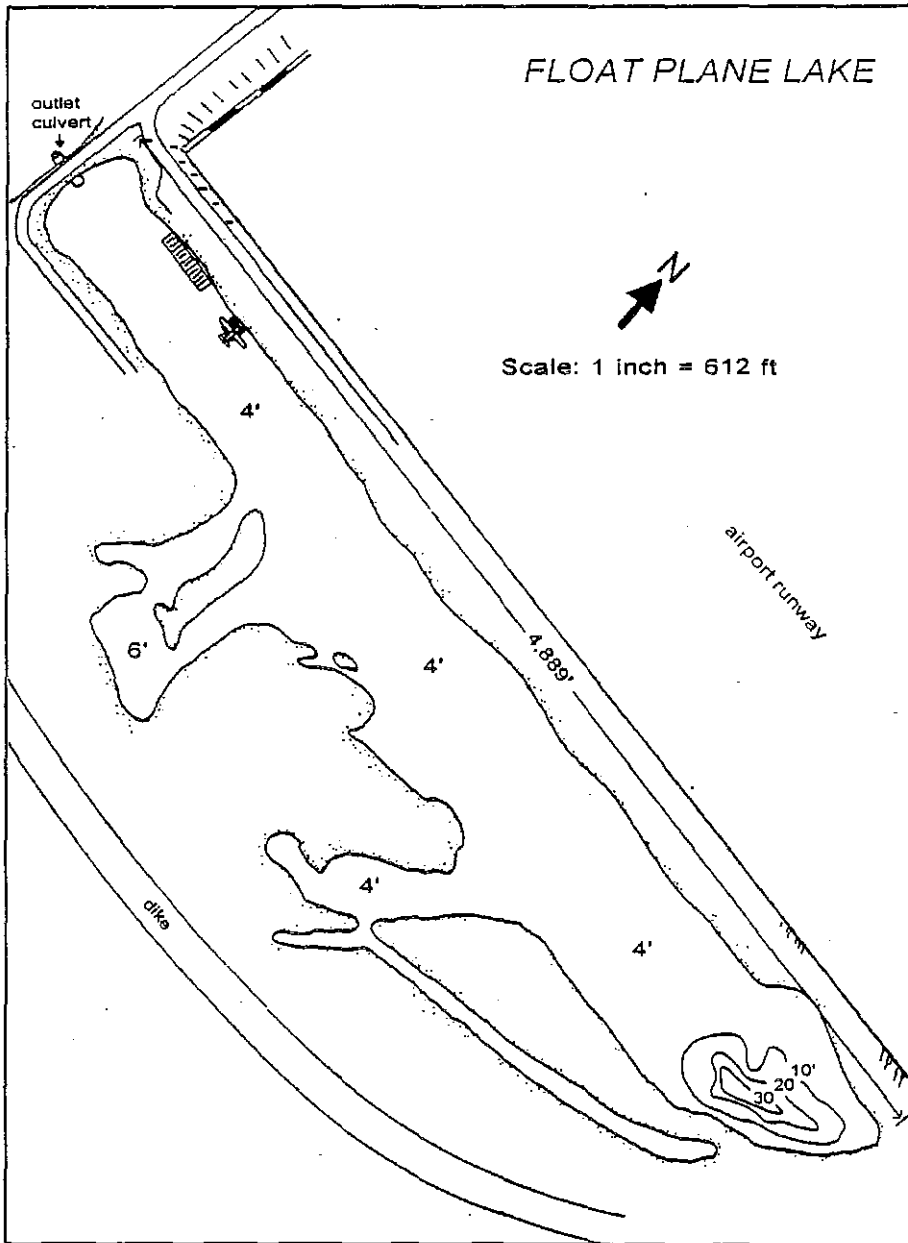


Figure 22.1 Float Plane Lake.

Description

Float Plane Lake was the original source of material for the construction of the Juneau Municipal Airport runway. The lake is 0.85 mile long, 400 feet wide, and averages 4 to 5 feet deep, with a 30-foot deep pocket in the south end (figure 22.1).

The water level of the lake is controlled by a culvert which connects the lake with the lower Mendenhall River. The culvert has "flap" gates which allow salt water to enter the lake on high tides.

The south side of the lake has extensive slough areas with emergent grass and overhanging willow and alder cover. The lakewater is often cloudy due to the high biological production.

Fish Species Present

Float Plane Lake contains populations of coho, pink, and chum salmon; cutthroat trout; Dolly Varden, and various marine fish species. The lake was reported to have been stocked with rainbow trout at one time; however, no documentation is available. In 1972, when the lake was drained for construction, salmonids from 4 to 10 inches were found in the lake. The Salmon Creek Hatchery released 182,601 coho salmon fry in the lake in 1984 when the hatchery ceased its operations.

Fish Habitat

Float Plane Lake functions as an estuary because of the intrusion of salt water during high tides. Such saline waters, along with the sloughs adjoining the lake and the good cover, provide a rich rearing environment for limited numbers of salmonids. It is doubtful that the lake would support dense populations of rearing fish because of the shallow depth and lack of overwintering areas.

Pink and chum salmon fry, presumably from the Mendenhall River system, are commonly found in the lake during the spring fry outmigration. There are no known spawning areas in Float Plane Lake.

Public Use

The lake is reported to have historically provided a good sport fishery after it was stocked. Presently, Float Plane Lake receives high use by private and commercial float-equipped aircraft, and the Federal Aviation Administration discourages any 'non-aircraft' activity in the area, for safety reasons.

A public access corridor to the Mendenhall Wetlands State Game Refuge extends south of the airport from Radcliffe Street and along a dike at the west end of Float Plane Lake. This area receives a high level of use by hikers,

joggers, birdwatchers, waterfowl hunters, and a few anglers.

Land Ownership

Float Plane Lake is on City and Borough of Juneau property.

Land Uses

Float Plane Lake originated as a result of major construction: the Juneau Municipal Airport. The lake has generally recovered from construction, but currently receives pollutants from aircraft and petroleum products and will likely be used as a borrow site for fill in future airport expansion.

Conclusions

Prior to heavy airplane traffic, Float Plane Lake provided a good opportunity for recreational fishery enhancement, but with heavy air traffic, the enhancement potential is no longer an option. In all likelihood, increased air traffic and associated pollution will have a detrimental effect on fish habitat values of the lake.

Recommendations

Maintain water quality of the system. Recommend fuel handling procedures to minimize the possibility of pollution. Take steps to minimize detrimental impacts to the lake's fish production. ■

Chapter 23

Gold Creek

Anadromous Stream Catalog Number: None

Location: Lat. 58°18'00" N.
Long. 134°25'10" W.
(middle of Juneau)

Description

Gold Creek originates on Sheep Mountain in the Juneau icefield and flows for about 5 miles before entering Gastineau Channel near the center of Juneau (figure 23.1).

The stream has a high gradient and numerous pools in the upper reaches. The channel substrate is gravel, large boulders, and bedrock. The water is generally clear; however, it is glacial during the warm summer months.

Downstream from Evergreen Park, Gold Creek flows all the way to tide-water through a concrete flume.

Fish Species Present

Gold Creek has populations of resident Dolly Varden and perhaps eastern brook trout which were stocked in 1953.

A record of fish stocking in Gold Creek is presented here:

DATE	SPECIES	NUMBER
12/17/52	king salmon (eyed eggs)	60,000
06/23/53	brook trout (fry)	4,000
12/13/53	king salmon (eyed eggs)	50,000

Small numbers of pink and chum salmon spawn in the intertidal area below the concrete flume. Twelve pink salmon and 28 chum salmon were observed actively spawning on 9/27/84 and 8/15/84, respectively, under and downstream from the Egan Drive Bridge. Gold Creek is reported to have once been one of the 'great salmon creeks' in Gastineau Channel.

Fish Habitat

Upstream from Evergreen Park, Gold Creek is a typical high-gradient mountain stream. Large boulders provide cover, as do occasional overhanging banks. Most spawning substrate is found in the lower ends of the pools.

The concrete flume through which the stream flows for the lower 1/4 mile is a barrier to upstream migration, as is a water diversion dam about 1 mile upstream from the mouth. Ebner Falls is a natural barrier, located about 2 miles upstream from the mouth.

Public Use

Gold Creek receives light fishing pressure, mostly in areas adjacent to Basin Road. The Perseverance Trail

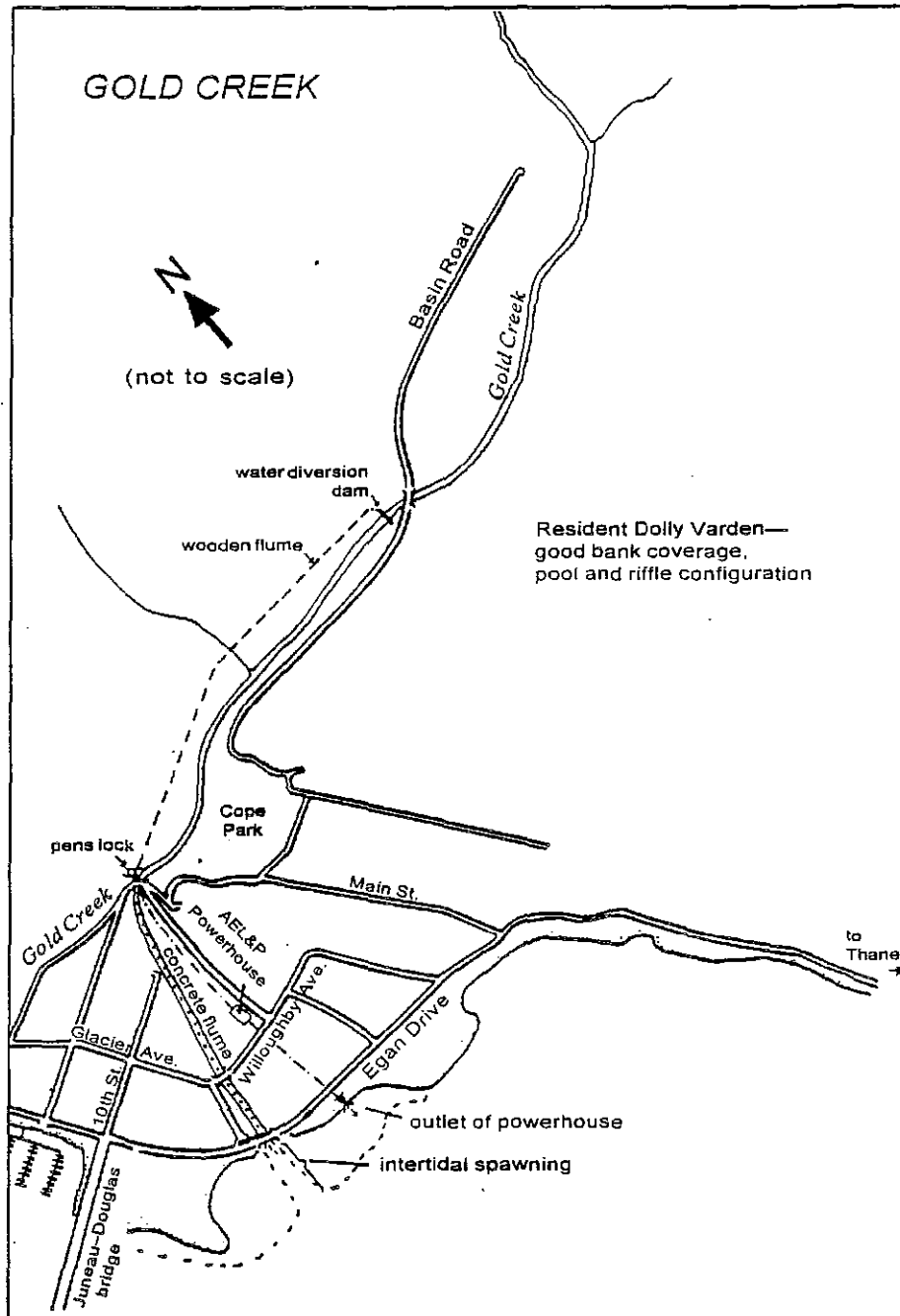


Figure 23.1 Gold Creek.

parallels Gold Creek for most of its length and provides excellent access to the upper reaches of picturesque Gold Creek.

Land Uses

Gold Creek has been subjected to a multitude of detrimental land uses. Consequently, its current fish values are quite low. The concrete flume, constructed in the early 1960's, not only eliminated

spawning habitat used by anadromous species, but also access to the upstream reaches.

Water diverted from the stream for hydroelectric power generation flows directly into Gastineau Channel rather than back into the stream. Consequently, water flow downstream from the diversion dam is variable and often very slight.

The City and Borough of Juneau developed a waterwell field for municipal

use in 1993-94, and pumps up to 25,000 gallons per day from the area.

Echo Bay has requested additional water from Gold Creek for use in development of the AJ mine. During the winters of 1993 and 1994, the stream was first observed to go dry during an extended cold, dry period. Resident Dolly Varden were known to have died during the low water flows.

The stream has also been identified as a possible location for draining water from the AJ mine. Given the level of water withdrawal, the fish habitat values of Gold Creek seem questionable.

The entire Gold Creek drainage has been subjected to major mining activities, as it was the original site of gold discovery in the Juneau area. Upstream from the diversion dam, Gold Creek is presently in a quite natural condition, even though it is bordered by at least two gravel parking lots.

Land Ownership

Gold Creek runs through City and Borough of Juneau and private property.

Conclusion

Gold Creek has been subjected to a multitude of land uses which have greatly reduced its value as a fish stream. The upper reaches, which flow through picturesque mountainous terrain, are very accessible and provide some angling for resident species.

Recommendation

The water quality of Gold Creek should be maintained because of the potential effects it could have on Gastineau Channel. The volume of water available in lower Gold Creek and the Alaska Electric Light and Power tailrace should be determined. It is believed that if the tailrace outflow were returned to Gold Creek channel directly below the powerhouse, there would be increased water for spawning by anadromous fish at the stream mouth. ■

Chapter 24

Grant Creek

Anadromous Stream Catalog Number:
111-40-10910

Location: Lat. 58°17'20" N.
Long. 134°26'54" W.
(1.3 mile North Douglas Highway)

Description

Grant Creek flows about 1 mile on Douglas Island and enters Gastineau Channel at 1.8 mile on North Douglas Highway (figure 24.1). The stream is 2 to 4 feet wide and 4 to 6 inches deep. It has a steep gradient, heavy vegetative cover, and contains much woody debris.

Fish Species Present

Grant Creek has a population of anadromous Dolly Varden. There are no records of fish stocking for this stream. Four juvenile fish traps set on August 6, 1970, caught four Dolly Varden. Salmon spawning escapement surveys have not been conducted at Grant Creek.

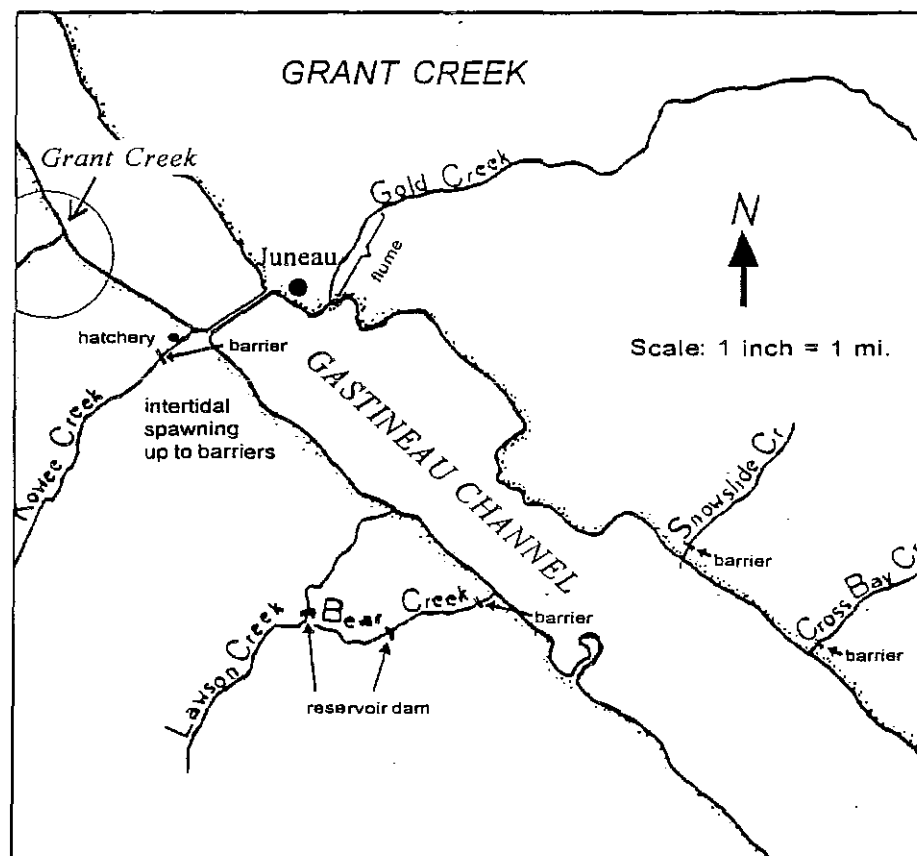


Figure 24.1 Grant Creek.

Fish Habitat

Grant Creek is very small and provides a minimal amount of habitat for rearing species. The stream has nearly 75 yards of intertidal spawning habitat that is presumed to be used to some degree by pink and chum salmon.

A private water withdrawal system upstream from the highway could be a barrier to upstream migration at lower water levels. A series of falls about 0.6 mile upstream from the mouth are believed to be a barrier to upstream migration.

Public Use

None known.

Land Ownership

The upper reaches of Grant Creek are located on City and Borough of Juneau property, and the lower reaches are bordered by private property.

Land Use

Grant Creek has been impacted by development of private water withdrawal systems and crossing by the North Douglas Highway. One water use permit is on file for Grant Creek.

Conclusion

Grant Creek has a low value for rearing species of fish; it does, however, provide potential intertidal spawning habitat for non-rearing species of salmonids.

Recommendations

The water quality of the stream should be maintained because of potential impacts to intertidal spawning areas. Escapement surveys should be conducted in the intertidal areas of Grant Creek to determine the magnitude of pink and/or chum salmon using the area. ■

Chapter 25

Hendrickson Creek

Anadromous Stream Catalog Number:
111-40-10980

Location: Lat. 58°29'26" N.
Long. 134°31'15" W.
(5.5 mile North Douglas Highway)

Description

Hendrickson Creek originates in a muskeg area and runs for approximately 1 mile on Douglas Island before emptying into Gastineau Channel (figure 25.1). The stream is 4 to 5 feet wide and has pools up to 2 feet deep. The stream has a gentle gradient and the water is clear with a brown tint.

Fish Species Present

Hendrickson Creek has populations of coho, pink, and chum salmon, Dolly Varden, and cutthroat trout. The stream has not been stocked and is very productive for its small size. Minnow trap data are presented in table 25.1.

The creek's Dolly Varden population appears to be anadromous, and the cutthroat trout population appears to be resident. Few salmon escapement surveys have been conducted at Hendrickson Creek. A streamside resident reported that approximately 200 pinks spawned in the stream in 1983 and 24 pinks spawned there in 1984. In 1984, two chum and 21 coho salmon were counted in the stream as well.

Fish Habitat

Most of the spawning habitat is located downstream from North Douglas Highway and above the intertidal area. The spawning substrate above the highway is quite limited. Rearing habitat is present throughout the stream. Cutthroat trout seem to prefer the upper

reaches, and Dolly Varden were found throughout the system.

The stream has numerous pools, undercut banks, logs, and overhanging grass which provide excellent cover in the lower reaches.

Public Use

None known.

Land Ownership

The upper reaches of Hendrickson Creek are on City and Borough of Juneau property. Private property lies adjacent to North Douglas Highway, and the lower

reaches of the creek are located on the Mendenhall Wetlands State Game Refuge.

Land Uses

Hendrickson Creek is used as the water source for two private residences.

The stream was impacted by two road crossings, but it seems to have generally recovered from effects of that construction. Both culverts pass fish adequately.

This stream could be impacted by the 'bench road' proposed by the City and Borough of Juneau.

Conclusion

Hendrickson Creek is a small but productive fish stream and should be given the maximum level of habitat protection.

Recommendations

Excellent fish habitat occurs throughout this stream. Thus, it will be necessary to critically review land-use permit applications and conduct on-site surveys to provide stipulations to protect its habitat values. Salmon escapement surveys should be conducted on this system to determine the magnitude of the spawning escapement. ■

Table 25.1. Summary of juvenile fish trapping data for Hendrickson Creek.

Date:	June 28, 1970
No. of traps:	4
Catch:	22 DV, 10 CT
Date:	August 31, 1985
Location:	private driveway (G. Hanna) upstream to highway.
No. of traps:	4
Catch:	7 SS, 27 DV, 9 CT, 1 cottid
Date:	August 31, 1985
Location:	private driveway (G. Hanna) upstream to highway.
No. of traps:	5
Catch:	5 SS, 29 DV, 18 CT
Date:	August 31, 1985
Location:	intertidal area
Catch:	juvenile flounders, cottids, and shrimp.

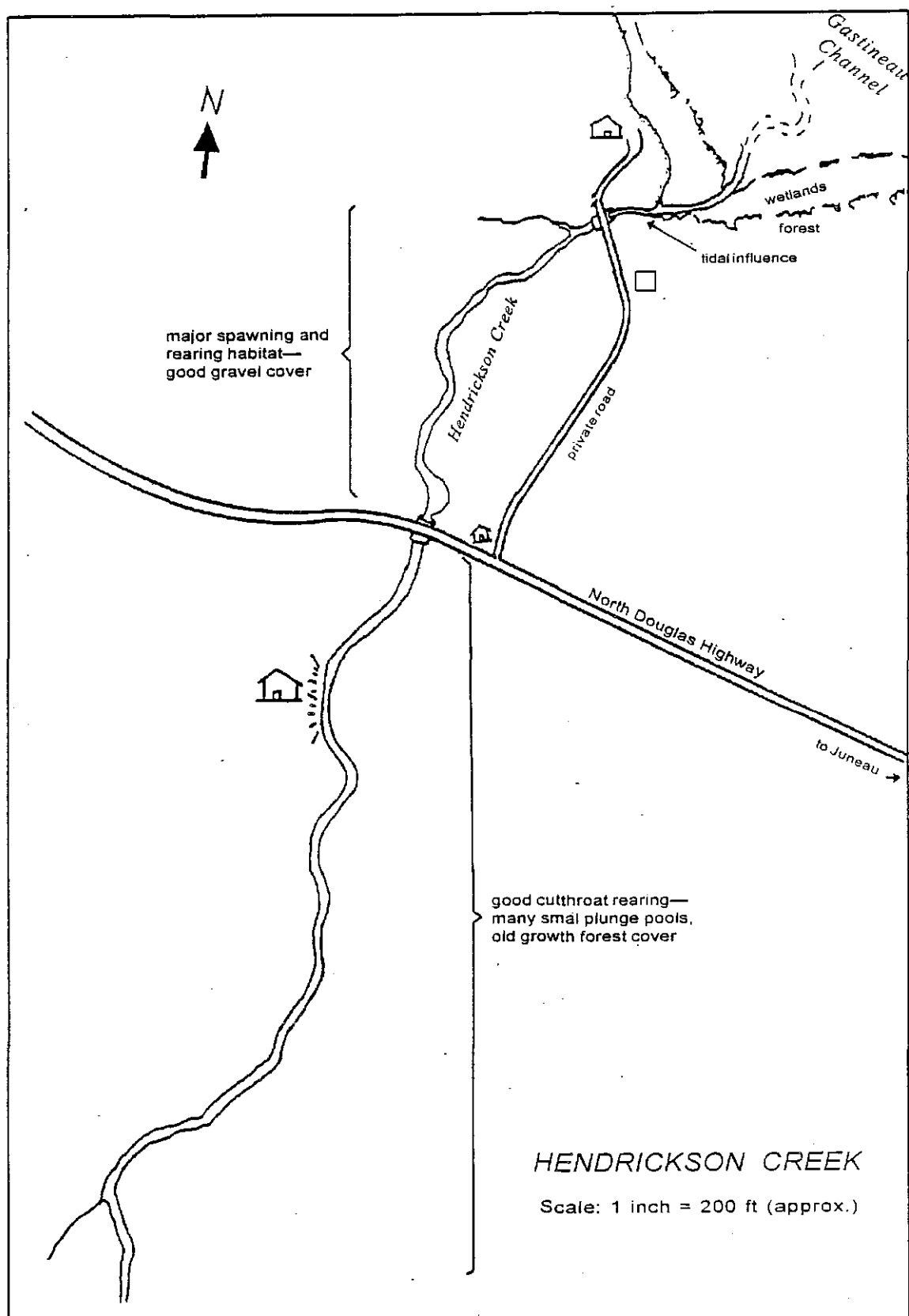


Figure 25.1 Hendrickson Creek.

Chapter 26

Herbert River (refer also to Windfall Lake and Strawberry Creek)

Anadromous Stream Catalog Number:
111-50-10070-2004

Location: Lat. 58°31'17" N.
Long. 134°48'10" W.
(28.2 mile Glacier Highway)

Description

Herbert River originates in a lake at the base of the Herbert Glacier. It runs approximately 4 miles across the forelands and empties into the same

estuary as Eagle River, directly to the north (figure 26.1).

Herbert River drains an area of nearly 20 square miles and has two major tributaries, Windfall Lake and

Strawberry Creek, which are covered in separate chapters. A small lake and numerous clearwater ponds are located on the moraine in front of the glacier. The ponds may be seasonally attached to the Herbert River. Herbert River runs very glacial, except during the winter months.

Fish Species Present

Herbert River contains populations of coho, pink, chum, and sockeye salmon; cutthroat and steelhead trout; and Dolly Varden. Fish populations in Herbert River have not been assessed. Thus, data on rearing populations and spawning escapements are not available.

In numerous clearwater tributaries, however, rearing coho salmon and Dolly Varden can be easily observed. On August 27, 1970, twenty adult sockeye salmon were observed in the stream.

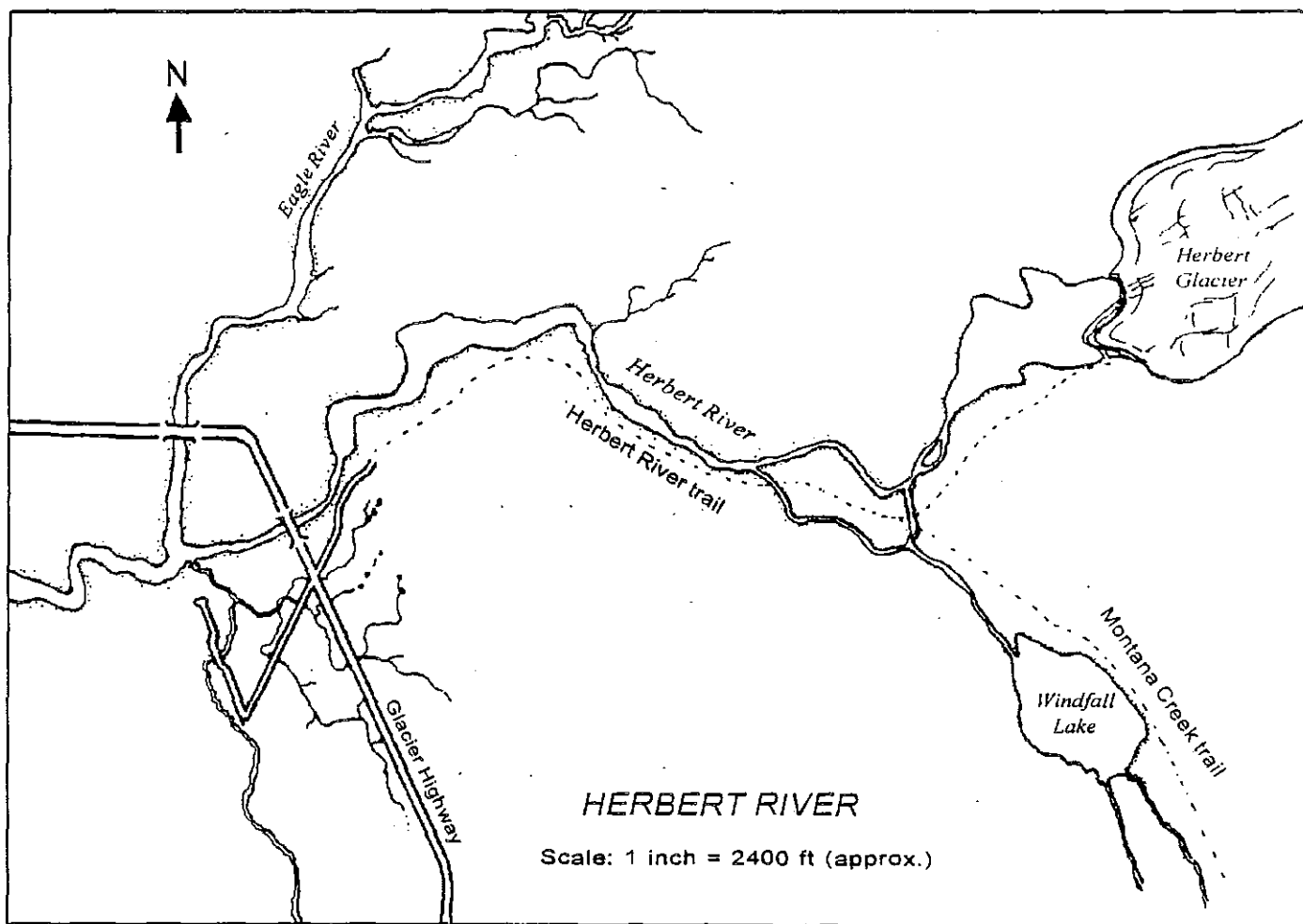


Figure 26.1 Herbert River.

Fish Habitat

Fish habitat in Herbert River has not been assessed, but the system is known to have many clearwater tributaries and beaver pond systems which provide good environments for both spawning and rearing.

The lake at the base of Herbert Glacier is presumed to be an overwintering area for Dolly Varden.

Public Use

Windfall Lake, the major tributary system of Herbert River, is a popular freshwater fishing location. Herbert River itself receives light pressure, primarily because of the glacial nature of the water throughout the summer season. It is presumed that a portion of the Dolly Varden caught at Eagle Beach are of Herbert River stock.

Herbert River and Herbert Glacier are accessed by a good trail system which receives heavy use throughout the summer and fall.

Land Ownership

Herbert River is located primarily in the Tongass National Forest, but it is bordered by private property downstream from the Glacier Highway Bridge.

Land Uses

Herbert River is essentially in a natural condition, especially in the upper reaches. The stream adjacent to the Herbert River road has been subjected to some gravel removal. Future mining and/or gravel extraction would probably pose the greatest threats to fish habitat in the Herbert River drainage.

Conclusion

Herbert River is a large glacial system. Neither the mainstem nor the numerous clearwater tributaries have been fully assessed for determination of their fishery values, yet they are presumed to be very productive.

Recommendations

The water quality of the Herbert River drainage should be maintained. Gravel and placer mining activities should be located and conducted so that they will not impact the fishery values in the system.

Fishery values should be fully assessed to determine the abundance and the distribution of rearing and spawning fish. ■

Chapter 27

Johnson Creek

Anadromous Stream Catalog Number:
111-50-10660

Location: Lat. 58°20'25" N.
Long. 134°32'42" W.
(6.3 mile North Douglas Highway)

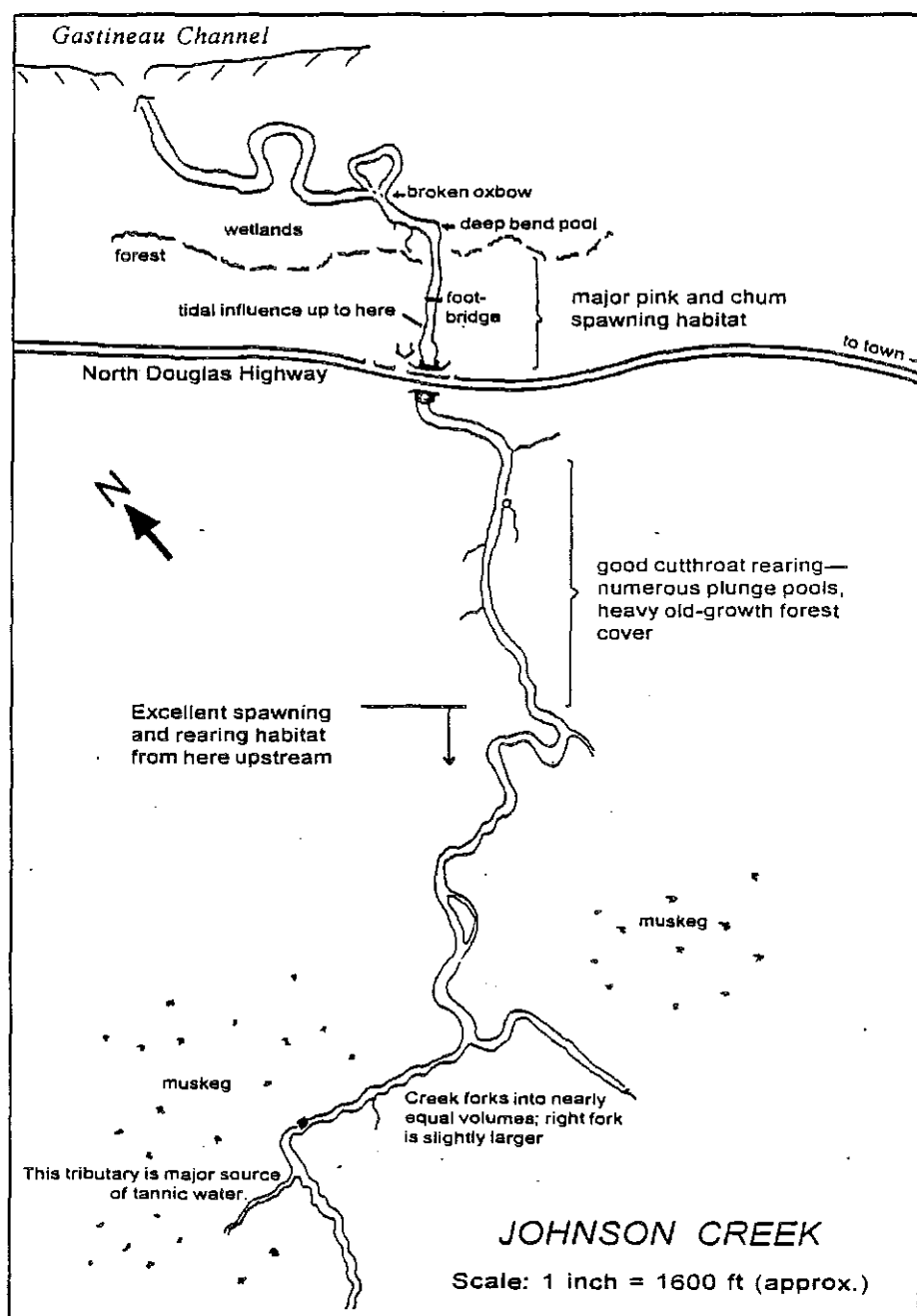


Figure 27.1 Johnson Creek.

Description

Johnson Creek flows approximately 2 miles in a northerly direction on Douglas Island and empties into Gastineau Channel (figure 27.1). This stream is 5 to 8 feet wide and has pools to 24 inches deep.

About 1 mile of the stream is located below North Douglas Highway. This section of the stream has a low gradient and makes many meanders through the grasslands by Gastineau Channel.

Upstream from the highway, Johnson Creek has a higher gradient, and at least five small tributaries enter the mainstem. The water runs clear, with a brownish tint.

Fish Species Present

Johnson Creek has stocks of coho, pink, and chum salmon, Dolly Varden, and cutthroat trout. The Dolly Varden appear to be anadromous, and the cutthroat trout appear to be resident. There are no records of fish stocking for this stream.

Trap data are summarized in table 27.1. Salmon escapement data are summarized in table 27.2.

Fish Habitat

Excellent spawning habitat is found in the intertidal area and upstream to North Douglas Highway. The long intertidal area has many pools and undercut banks with overhanging grass which would provide good rearing habitat.

Good spawning habitat is found in pockets throughout the mainstem above the highway and, to a lesser degree, in the tributaries.

Above the highway, the stream consists of many pools and steep riffle areas with good overhead cover which provide for excellent rearing.

Public Use

Public use on this stream has not been monitored. The intertidal area

is used by duck hunters and appears as though it could also provide some angling opportunity.

Land Ownership

The upper reaches of Johnson Creek are located on the Tongass National Forest. The stream then flows through an area of private property adjacent to Douglas Highway, and the intertidal area is in the Mendenhall Wetlands State Game Refuge.

Land Uses

Johnson Creek is in a nearly natural condition, except for the Douglas Highway crossing—from which the stream has generally recovered. The habitat values of Johnson Creek are quite secure except for possible development on private land holdings, or road construction in the stream's headwaters.

Conclusion

Johnson Creek is a small but productive stream and should be given the maximum level of habitat protection.

Recommendations

Excellent fish habitat is found throughout this stream. Thus, it will be necessary to critically review land-use permit applications and conduct on-site surveys to provide stipulations to protect its habitat values.

The water quality of the system should be maintained and all development located away from the stream to prevent any detrimental effects to the stream's fish habitat.

Salmon escapement surveys should be conducted periodically from early August through September to determine the abundance of chum salmon spawning in the system. ■

Table 27.1. Summary of juvenile fish trapping data for Johnson Creek.

	CATCH	OBSERVED
Date: Jul. 9, 1970	10 coho	0 coho
No. of traps: 12	15 Dolly Varden	6 Dolly Varden
	25 cutthroat trout	12 unidentified salmonids
Date: Aug. 30, 1984	3 coho	
No. of traps: 1	3 Dolly Varden	
Location: pool below highway culvert	0 cutthroat trout	
Date: Aug. 30, 1984	7 coho	
No. of traps: 5	13 Dolly Varden	
Location: upstream from highway	8 cutthroat trout	

Table 27.2. Summary of peak salmon escapement counts for Johnson Creek.

DATE	COHO	PINK	CHUM
1978	53 (10/23)	N.S. ¹	N.S.
1981	8 (10/02)	N.S.	N.S.
1982	19 (10/25)	N.S.	N.S.
1983	9 (12/21)	N.S.	N.S.
1984	27 (10/11)	315 (08/30)	N.S.
1985	24 (10/25)	151 (10/25)	N.S.
1986	8 (10/28)	N.S.	N.S.
1987	2 (10/14)	N.S.	N.S.
1988	10 (10/10) ²	N.S.	N.S.
1989	N.S.	N.S.	N.S.
1990	0 (11/15)	N.S.	N.S.

¹ N.S. = no survey.

² Estimated from skeletons.

Chapter 28

Jordan Creek

Anadromous Stream Catalog Number:

111-50-10620

Location: Lat. 58°21'12" N.

Long. 134°34'7" W.

(9.0 mile Egan Drive)

Description

Jordan Creek drains the eastern edge of the Mendenhall Valley. It drains an area of about 1,700 square acres, is about 3 miles in length, and enters Gastineau Channel through a culvert under the middle of the Juneau Airport runway (figure 28.1).

The stream's headwaters are spring-fed. Jordan Creek ranges from 5 to 20 feet in width and 4 inches to 6 feet in depth, with a low gradient and mild meanders throughout its length. The water is typically clear in the headwaters and develops a brownish tint midway to salt water.

Fish Species Present

Jordan Creek has wild stocks of coho and pink salmon, Dolly Varden, and cutthroat trout.

The stream was stocked with 3,000 eastern brook trout (char) in 1953 and 4,800 coho in 1970.

The fishery values of Jordan Creek have been documented many times in the past. Recent juvenile fish trap data are presented in table 28.1. Salmon spawning escapement data are presented in table 28.2.

Fish Habitat

The entire Jordan Creek system consists of riffles and pools. Good spawning and rearing habitat is found throughout the system. Some areas of marshy habitat with muddy bottom are found in the upper reaches. Most of the

habitat ranges from excellent to zero depending on the presence of water. There are no barriers on Jordan Creek.

Public Use

Jordan Creek above the airport runway has been closed to salmon fishing since 1962 and to all fishing since 1983. Jordan Creek was once a favorite location for cutthroat trout angling. The mouth of Jordan Creek, downstream from the runway, still receives some angling pressure from anglers targeting coho salmon. The shores of upper Jordan Creek receive considerable use by neighborhood children. Upper Jordan Creek is in a fairly natural condition and is used by waterfowl and furbearers.

Both Glacier Valley and Floyd Dryden schools are in close proximity to Jordan Creek. In 1991, an aquatic education trail was built on Jordan Creek for use by the schools. The trail was constructed by the Division of Sport Fish and the Juneau Department of

stream is bounded by good overhanging vegetation, and the stream also contains abundant woody debris.

An active beaver colony is located about 1 mile upstream from Egan Drive. These ponds provide good overwinter habitat for rearing and resident fish.

During dry periods Jordan Creek periodically dries up downstream from Egan Drive. In this area, the value of fish

Table 28.1. Summary of juvenile fish trap data for Jordan Creek.

DATE	LOCATION	NO. OF TRAPS	CATCH
11/13/81	airport runway to just above Yandukin Drive	6	100 coho 30 Dolly Varden
4/23/82	mile-long stretch in beaver pond area behind Glacier Valley School	10	340 coho fry 25 coho smolt 171 Dolly Varden
7/6/84	from Egan Drive Bridge upstream to Nancy Street	7	223 coho fry 40 Dolly Varden
7/9/84	from Nancy Street upstream to Hayes Way	9	23 coho fry 115 Dolly Varden
7/10/84	from Jennifer Street upstream to Amalga Street bridge	6	63 coho fry 51 Dolly Varden
7/20/84	from Amalga Street bridge upstream to E. Fork headwaters	8	178 coho fry 32 Dolly Varden
7/22/84	headwater tributaries above E. Fork	—	108 coho fry 3 Dolly Varden
April 1994	two refuge ponds next to Shell Simmons Drive (population estimates by NMFS Auke Bay Laboratory)		735 rearing coho of 3 age classes
	Also trapped were:		22 Dolly Varden 8 cutthroat trout 14 pink fry 6 chum fry 1 sockeye smolt

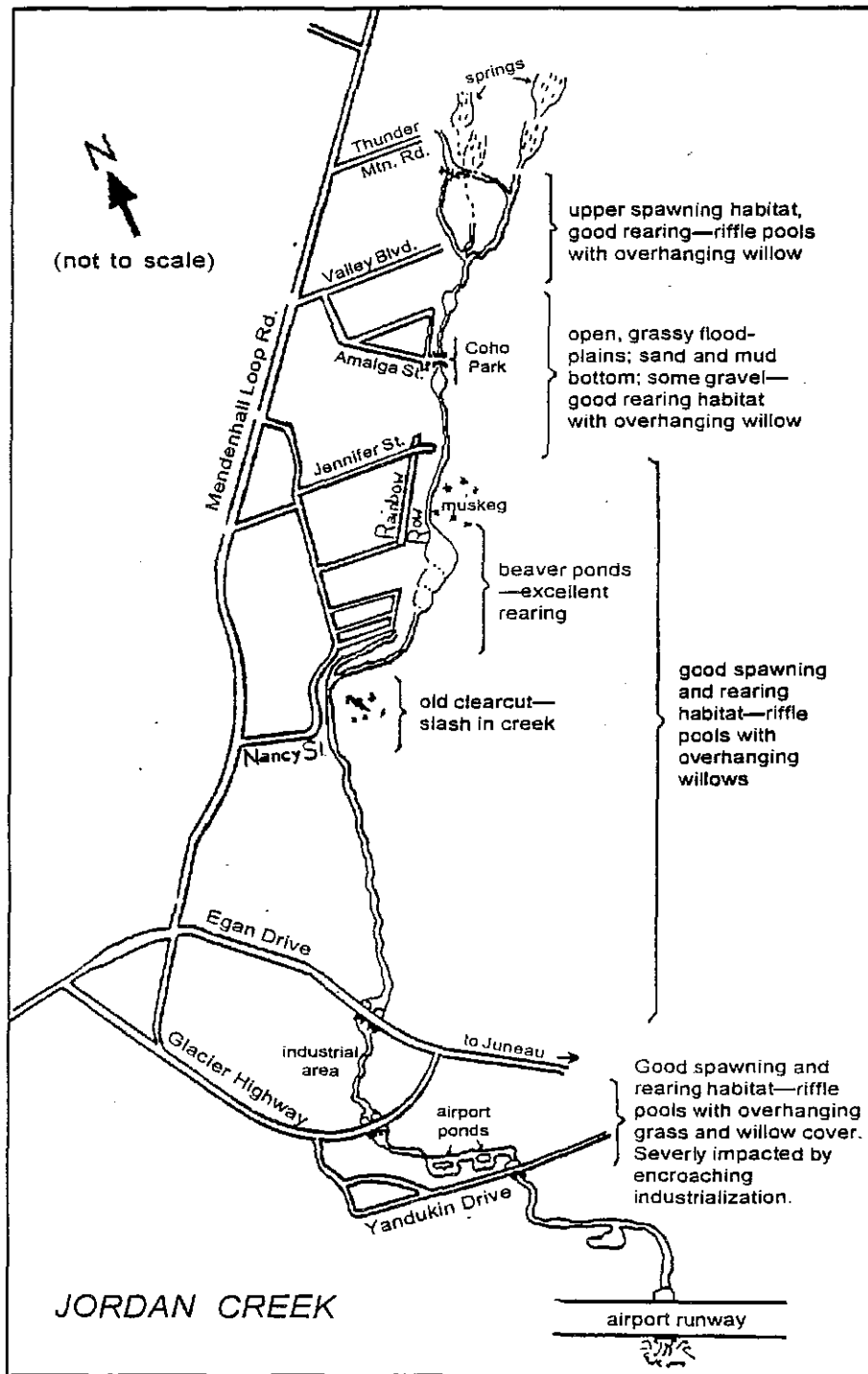


Figure 28.1 Jordan Creek.

Parks and Recreation. The trail is located at the end of Jennifer Street.

Curriculum for use on the trail was developed by the Alaska Discovery Foundation with a grant from the Division of Sport Fish. Beginning in the 1991-92 school year, aquatic education and Jordan Creek became important elements in the education of local children. Ideally, the aquatic education

trail can be extended in the future to access more natural features in the area.

Land Ownership

Jordan Creek originates on property owned by the City and Borough of Juneau (CBJ) and runs through private property from approximately Valley Boulevard downstream to the airport. Jordan Creek then flows through CBJ

Table 28.2. Coho salmon escape-ment peak counts for Jordan Creek.

DATE	NO. OF COHO
10/14/69	60
10/08/76	50
10/31/78	170
10/29/79	51
10/20/80	31
10/12/82	482
10/31/83	367
10/22/83	182
10/26/84	184
10/15/85	72
10/13/86	163
10/22/87	251
10/25/88	215
10/13/89	133
10/26/90	214
10/23/91	322
10/29/92	785
10/29/93	322
10/19/94	371

airport property and enters Gastineau Channel on the Mendenhall Wetlands State Game Refuge.

Land Use

Upstream from Egan Drive, Jordan Creek presently forms the eastern boundary of urban development, with the exception of the Coho Park housing project on the east side of the stream.

Jordan Creek near Nancy Street served as the boundary of a large timber clearcut which was harvested on the east side of the creek in the late 1960's. Slash and logging debris still remain in the stream in this section; however, some has been removed.

A gravel pit over 70 feet deep was excavated on the westernmost headwater tributary just downstream from Thunder Mountain Trailer Court in the 1960's. For many years, the abandoned pit was used as a dump site for all types of refuse, including private household garbage. Water draining from the pit was determined to be very high in iron sediment and low in dissolved oxygen. Other chemical properties of the drainage are suspected

to have had detrimental effects on the production of upper Jordan Creek.

At the time of this writing, drainage from the pit has been diverted to Duck Creek, and the pit has been nearly filled in with soil and woody debris. It is unknown if polluted drainage is still leaching into Jordan Creek.

Jordan Creek has been subjected to at least two illegal road crossings upstream from Egan Drive. The only crossing currently existing above Egan Drive is at Amalga Street, and this bridge spans the entire flood plain.

Downstream from Egan Drive, Jordan Creek has been subjected to many land use activities which have had detrimental effects on fish habitat values. There are at least six roads crossing Jordan Creek downstream from Egan Drive. Over 200 feet of excellent fish habitat was replaced by a culvert in 1984 during reconstruction of old Glacier Highway. The culvert under the Juneau Municipal Airport is approximately 300 feet long.

Bridges accessing the Jordan Creek Business Park area were required to span the entire flood plain. From Egan Drive downstream to below old Glacier Highway, a 1,000-yard-long section of the creek was channelized to provide development of streamside property. The "channelized" section of lower Jordan Creek has essentially recovered from the excavation. It currently has overhanging banks and vegetation and is very productive fish habitat.

A culvert adjacent to the Mendenhall fire station was reportedly set too high

in elevation and has caused sedimentation to fill in some of the pools upstream from the culvert.

Sections of Jordan Creek go dry periodically during periods of dry weather. A long-time resident of the area reports that the stream occasionally went dry in historical days but it now occurs more frequently. It is presumed that the dewatering is caused in part by the large volume of water that is being withdrawn from the aquifer adjacent to Jordan Creek for its entire length. The water withdrawn exits the Mendenhall Valley via the sewer system and does not filter back into local streams.

Currently, the greatest threats to the fish habitat of Jordan Creek are a proposed road system, future housing east of the stream above Egan Drive, and continued development in the business area.

In 1989, the Division of Sport Fish, in cooperation with the City and Borough of Juneau, cleaned all non-natural debris from Jordan Creek. The stream flow immediately increased and began to flush built-up sediment from the stream.

Conclusion

Fish habitat values have been subjected to tremendous abuse by adverse land uses for many years. Much of the productive capability of Jordan Creek has been lost; however, it is still one of the most productive fish streams in the Juneau area. Fishery values of this system are very vulnerable to impacts from future land use activities because of the stream's location in major urban and industrial districts.

Recommendations

Jordan Creek would be an excellent stream to designate as a community stream habitat restoration project. Programs should be implemented to reestablish fish habitat values at the expense of future streamside development.

The Juneau community, resource agencies, volunteer groups, and developers should all play a role in the reclamation of Jordan Creek.

Specific recommendations for the maintenance and protection of Jordan Creek's habitat values would include:

1. Establish streamside habitat sanctuary areas to prevent any fill or disturbance within 50 feet of the remaining flood plain.
2. Urge those using private well-water sources to hook up to CBJ's water system and stop drawing water from the aquifer.
3. Locate all new development away from the stream and ensure that the drainage from all new development meets water quality standards prior to entering the stream.
4. Study the feasibility of removing sediment from the pools and loosening up the bottom gravel. (If found feasible, this treatment could enhance the fish production of Jordan Creek.)
5. Remove all non-natural debris from the stream and conduct annual clean-up programs to maintain the stream's clean condition. ■

Chapter 29

Kowee Creek

Anadromous Stream Catalog Number:
111-40-10900

Location: Lat. 58°17'54" N.
Long. 134°25'57" W.
(on Douglas Island immediately W of
Douglas Bridge)

Description

Kowee Creek flows in a northerly direction on Douglas Island for about 2 miles before entering Gastineau Channel in 'West' Juneau (figure 29.1). The stream drains a watershed of approximately 2¼ square miles. The stream has a high gradient, and the water is clear.

Kowee Creek is presently the site of a small private non-profit fish hatchery, owned by Douglas Island Pink and Chum Inc., which is now used for fishery research by the UAS Fisheries Department.

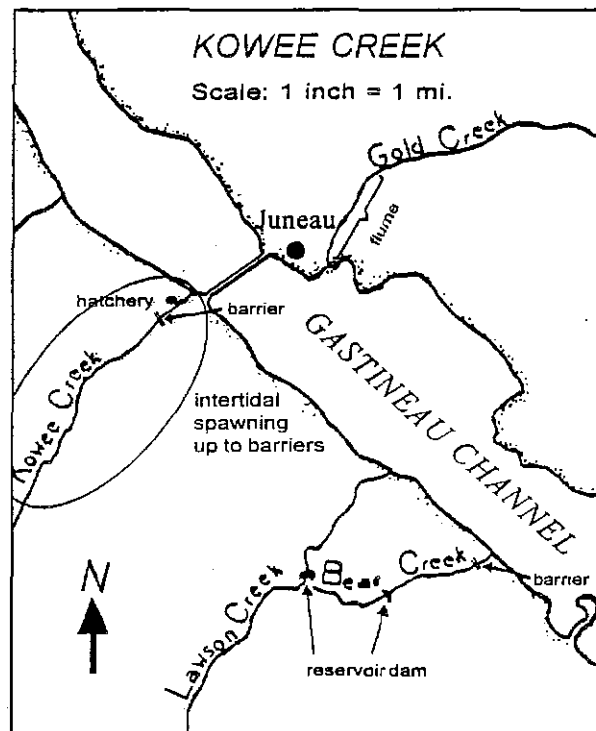


Figure 29.1 Kowee Creek.

Fish Species Present

Kowee Creek has stocks of pink and chum salmon and Dolly Varden. The natural run of pink salmon numbers several hundred fish, and up to 50 chum salmon spawn in Kowee Creek annually. Hatchery production at Kowee Creek has contributed up to 13,600 pink and 1,800 chum salmon annually.

Fish Habitat

Kowee Creek is primarily a spawning stream with only a very limited amount of rearing area located at the base of a

barrier falls some 200 yards upstream from the mouth. Approximately 100 yards of intertidal spawning habitat is present, and streamside cover is minimal.

Public Use

Kowee Creek is closed to salmon fishing to protect the hatchery's brood stock; however, the stream and Gastineau Channel near the stream mouth do receive some sport fishing pressure—primarily by anglers targeting on Dolly Varden. In 1983, over 200 angler-hours were ex-

pendent and nearly 500 Dolly Varden were caught at Kowee Creek. In 1987, 235 angler hours were expended in catching a total of 469 Dolly Varden; and in 1990, 327 hours were expended in catching 70 Dolly Varden. Kowee Creek is one of the better places in the Juneau area to fish for Dolly Varden in spring.

Land Ownership

Kowee Creek originates on U.S. Forest Service land, and the middle and lower sections are on private property.

Land Uses

The west shore of Kowee Creek in the intertidal area has been rip-rapped to contain fill material on which an industrial area is located. The fill displaced some of the tide flat but confined the stream's flow to a single channel, which may have actually improved intertidal spawning.

Upstream from the falls, the stream flows through a steep gorge which has housing projects located right up to the edge. The stream has essentially recovered from any fill that may have entered the system during construction of the housing facilities, and the steep sides of the gorge are adequately vegetated. Kowee Creek could be vulnerable to further residential development in the upper reaches.

Two water withdrawal permits are on file for Kowee Creek, one for private use and one for the fish hatchery.

Conclusion

Kowee Creek is a small stream with limited natural production, located in a major residential area. A private hatchery located on the stream could increase the annual runs of fish to Kowee Creek; if the facility were operating in a production mode.

Recommendations

The water quality of the stream must be maintained for hatchery use. Any future developments must be critically evaluated, to prevent degradation of the water source. ■

Chapter 30

Lake Creek (also refer to Auke Creek)

Anadromous Stream Catalog Number:
111-50-10420-2010

Location: Lat. 58°23'29" N.
Long. 134°37'52" W.
(6.5 mile Mendenhall Loop Road)

Description

Lake Creek is the main tributary to Auke Lake (figure 30.1). It drains an area of approximately 3 square miles and is about 4 miles in length. The stream is approximately 15 feet wide and 1 foot deep.

The streambed substrate is mostly gravel with some bedrock. The gradient is moderate, and the water generally runs clear but has a brownish tint during high flows.

Fish Species Present

Lake Creek has runs of coho, pink, and sockeye salmon, Dolly Varden, cutthroat and rainbow trout. Summaries of fish stocking data, salmon migrations, and Dolly Varden and cutthroat trout migrations for the Auke Lake system are presented in Chapter 1.

Eight juvenile fish traps set on May 7, 1970 caught 5 Dolly Varden, 3 cutthroat trout, and 38 coho salmon.

Fish Habitat

Lake Creek provides the primary spawning habitat in the Auke Lake drainage. The stream has an excellent gravel base and most salmon spawning is known to occur in the lower 2,000 feet of the stream.

Dolly Varden and cutthroat trout use habitat further upstream. The

stream does provide some rearing in pools; however, the overall rearing potential of Lake Creek is low, because of its small pools, moderate gradient, and sparse cover. The water is generally clear, and rearing salmonids can easily be observed in the stream.

A barrier falls is located approximately 1¼ miles upstream from the mouth.

The instream flow in Lake Creek has been very low the last several years and, subsequently, spawning success in the stream has been variable. There has been insufficient water in the stream to provide for spawner access in some summers and the stream is believed to have possibly frozen-out during the winters. The reduced instream flow may be due to a build-up of gravel in the stream bed.

Public Use

Lake Creek receives little sport fishing pressure. The Auke Lake drainage is closed to angling for sockeye salmon and Dolly Varden. Even though angling opportunities are restricted by regulations, 750 angler-hours of effort were expended in 1983 and produced a catch of 720 cutthroat trout during the summer.

The mouth of Lake Creek in Auke Lake is a favorite fishing area, both in summer and during winter ice fishing.

Land Ownership

The lower sections of Lake Creek are bordered by private property, and the upper reaches are on the Tongass National Forest.

Land Uses

The lower section of Lake Creek has been channelized somewhat to prevent flooding of the adjoining private property. This actually confined the water to a single channel and prevented the stream meandering as a natural stream does.

The Lake Creek Bridge, which was constructed in 1969, may be responsible for instream flow problems that have occurred during the last several years; however, this has not been confirmed. Lake Creek could also be vulnerable to future residential development and associated activities on private property located upstream from Mendenhall Loop Road.

One water withdrawal permit is on file for Lake Creek.

Conclusion

Lake Creek is the largest tributary to Auke Lake and provides major spawning habitat for populations of Auke Lake salmonids.

Recommendations

The water quality of Lake Creek must be maintained. Any future development along Lake Creek should be located away from the stream. A buffer of natural vegetation should be maintained alongside the stream.

All drainages should be drained away from the stream. Drainage should be filtered to remove sediment and pollutants prior to their entering the stream. All water withdrawal should be located as far away from the stream as possible.

The watershed should be given the highest level of habitat protection available. ■

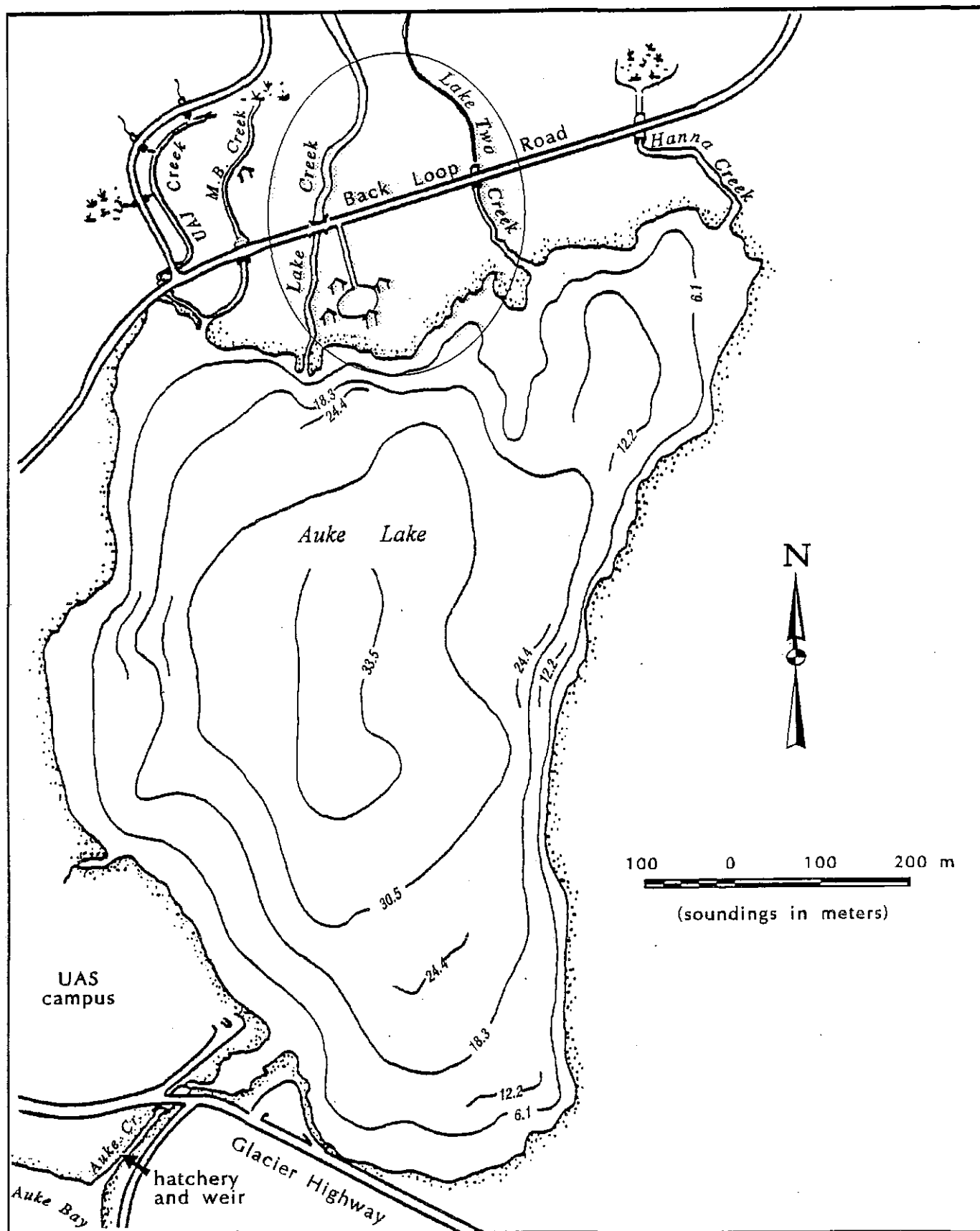


Figure 30.1 Auke Lake, Lake Creek, and Lake Two Creek.

Chapter 31

Lake Two Creek (refer also to Lake Creek, Auke Creek, and Auke Lake)

Anadromous Stream Catalog Number:
111-50-10420-2004

Location: Lat. 58°23'35" N.
Long. 134°37'20" W.
(6 mile Mendenhall Loop Road)

Description

Lake Two Creek is a small drainage of approximately 1 square mile just east of the Lake Creek system (see figure 30.1, previous page). The stream averages 4 feet wide, 6 inches in depth, and flows about 1 mile before entering Auke Lake.

Streambed substrate is generally gravel, and the gradient is moderate. The water is clear, with a brownish tint.

Fish Species Present

Lake Two Creek has runs of coho, pink, and sockeye salmon as well as Dolly Varden and cutthroat trout.

The average catch per juvenile fish trap fished on July 15, 1970 was 9.2 Dolly Varden, 7.8 coho salmon, and 0.2 cutthroat trout. Additionally, more than 330 rearing salmonids were observed in the stream.

Lake Two Creek itself has never been stocked; however, the Auke Lake system has an extensive history of stocking. A summary of stocking, fish migrations, and coho harvest data for the Auke Lake system is presented in Chapter 1 (Auke Creek).

Fish Habitat

Lake Two Creek provides excellent rearing and spawning habitat throughout its length. Sockeye salmon spawn in the lower half of the stream. The upper reaches of the stream contain excellent pockets of spawning substrate used by

coho salmon, Dolly Varden, and cutthroat trout.

The small stream basically consists of pools and riffles, with excellent overhead vegetative cover, overhanging banks, and a good amount of large woody debris. There are no natural barriers on the stream; however, a gravel bar at the Mendenhall Loop Road crossing could be a barrier at low water.

Lake Two Creek provides an excellent combination of fish habitat types, is very productive for its size, and is important to all species of fish using Auke Lake.

Public Use

Lake Two Creek receives little, if any, public use. It is, however, a favorite area of neighborhood children.

Land Ownership

The stream originates on the Tongass National Forest, and its lower reaches are on private property.

Land Uses

Lake Two Creek is presently being impacted by private water withdrawal in at least three locations. This could have detrimental effects on the eggs in the gravel during cold and/or dry periods. The culverts under the Loop Road pass fish adequately during normal water flows, but the gravel tends to form a barrier during low water levels, which

precludes fish access to the areas above the road.

Lake Two Creek flows through the Windfall subdivision. High fecal coliform counts have been documented in Lake Two Creek in Windfall subdivision.

Conclusion

Lake Two Creek is a small but tremendously productive stream. It provides spawning and rearing habitat for all species of fish using Auke Lake. The stream's water quality is possibly being impacted by drainage from private sewage systems.

Recommendations

The water quality and habitat values of Lake Two Creek must be maintained or even improved through future development in the watershed.

Developments should be located as far as possible from the stream, and drainages from such sites must meet the State's water quality standards before entering the stream.

It is recommended that current private water use be terminated as soon as possible and alternative sources developed. Wells should be located as far from the stream as possible. The area has a very high water table, and private drainfield failures are common. Seepage from drainfields has been documented in Lake Two Creek.

Large boulders should be placed in the stream at the Loop Road culverts to facilitate water flow and prevent the development of gravel bars that act as barriers during periods of low water.

The spawning habitat and hydrology of Lake Two Creek should be investigated to determine if the spawning habitat can be improved. ■

Chapter 32

Lawson Creek

Anadromous Stream Catalog Number:
111-40-10890

Location: Lat. 58°17'11" N.
Long. 134°24'30" W.
(1.1 mile Douglas Highway)

Description

Lawson Creek flows in a northerly direction for about 2 miles on Douglas Island and empties into Gastineau Channel at about mile 1.1 on the Douglas Highway (figure 32.1). The stream drains an area of about 3 square miles.

The stream has a fairly steep gradient, and the streambed is mostly bedrock and gravel. The water is normally clear, with a brownish tint during high flows. A concrete dam is located approximately 1 mile above the stream mouth.

Fish Species Present

Lawson Creek has runs of pink, chum, and coho salmon (table 32.1), Dolly Varden, and cutthroat trout. The average catch per trap of two minnow traps fished on June 23, 1970, was 2.0 Dolly Varden per trap.

Fish Habitat

Lawson Creek has a fairly steep gradient. Its greatest potential is for fish spawning rather than rearing. Fair intertidal spawning habitat exists at the stream mouth. Spawning habitat extends upstream from the mouth for about $\frac{3}{8}$ mile.

Overall, the rearing potential is poor, due to the streambed substrate, steep gradient, and lack of slow-water areas. There is a barrier to upstream migration about $\frac{1}{2}$ mile upstream from the mouth. Fish populations above the barrier have not been investigated.

Public Use

Lawson Creek is located adjacent to residential areas and is known to provide sport fishing opportunities; however, angler effort and harvest have not been quantified.

Pink salmon are the primary target of anglers fishing Lawson Creek. Some of the fish taken at the stream mouth may be destined for one of the hatcheries in Gastineau Channel.

Land Ownership

Lawson Creek originates on U.S. Forest Service property, then flows through a section of City and Borough of Juneau property and through private property near the mouth.

Land Uses

Tidelands adjacent to Lawson Creek have been filled for residential development. The stream channel on one side near the mouth has been rip-rapped to prevent erosion. The rip-rapped area has been vegetated and stabilized. Recent residential development upstream from the highway has contributed high levels of sediment to the stream during wet periods.

The major threat to the habitat values of Lawson Creek is further residential development adjacent to the stream. A dam once used to supply water to the City of Douglas is now only used to divert water into the Bear Creek drainage. A permit is on file for 260,000 gallons to be diverted daily.

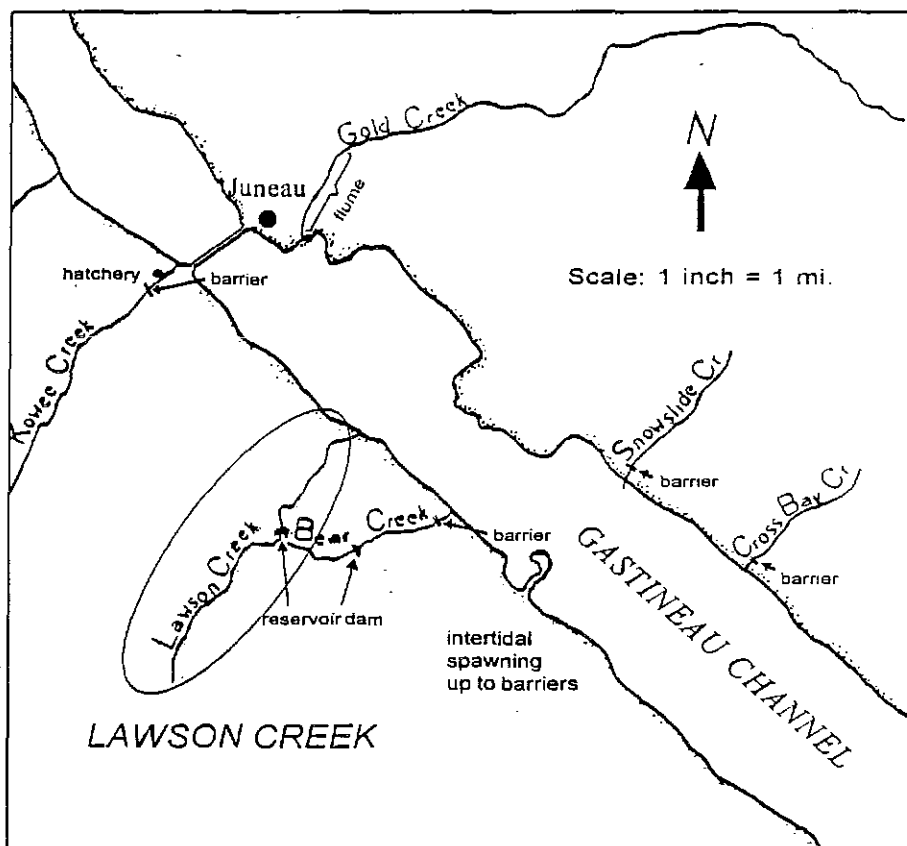


Figure 32.1 Lawson Creek.

Table 32.1. Summary of salmon escapement in Lawson Creek, 1968-1990.

YEAR	PINK SALMON	CHUM SALMON	COHO SALMON
1968	20 (08/20) ¹	...	...
1969	25 (08/25)	...	...
1977	480 (08/10)	...	...
1979	875 (08/21)	...	...
1980	...	8 (08/21)	...
1981	100 (08/21)	...	...
1982	276 (08/17)	10 (08/17)	...
1983	758 (08/25)	...	...
1984	...	...	12 (10/12)
1985	2,500 (08/01)	190 (07/28)	...
1986	...	141 (08/04)	...
1987	16,300 (08/06)	...	...
1988	1,427 (08/12)	38 (07/28)	...
1989	4,656 (08/29)	14 (08/05)	...
1990	2,058 (08/29)	237 (08/15)	...
1991	386 (08/13)	374 (08/13)	...
1992	946 (08/25)	...	...
1993	77 (08/31)	27 (08/24)	...
1994	3,446 (09/07)	233 (08/10)	...

¹ Lawson Creek was stocked with 1,000 eastern brook trout (char) on June 20, 1953. Apparently the transplant was unsuccessful, for no eastern brook trout have been reported in the stream.

Conclusion

Lawson Creek is primarily a spawning system used by pink salmon. It is centrally located in a residentially developed area and could potentially provide substantial angling opportunity. Lawson Creek is vulnerable to impacts from future residential development.

Recommendations

Land use applications for stream-side development should be critically reviewed and stipulations provided to maintain the stream's water quality. The lower section of Lawson Creek provides fair spawning habitat. This area could be improved for intertidal spawning by stabilization of the stream channel and introduction of good spawning gravel. Perhaps this could be requested as mitigation for some land use activity upstream in the watershed. ■

Chapter 33

Lena Creek

Anadromous Stream Catalog Number:
111-50-10300

Location: Lat. 58°23'47" N.
Long. 134°44'49" W.
(17.2 mile Glacier Highway)

Description

Lena Creek drains a watershed of about ½ square mile and is about 1 mile in length. It runs in a north-west direction and enters salt water at Lena Cove in Favorite Channel (figure 33.1). The stream runs 4 to 12 feet wide, 1 foot deep, and has a steep gradient. The water runs clear, with a brownish tint.

The streambed is primarily bedrock and large gravel.

Fish Habitat

Most of Lena Creek's spawning habitat is found downstream from Glacier Highway. Above the highway, spawning substrate is found only in pools between bedrock areas.

Overall, the spawning and rearing potential is low because of the relatively steep gradient and lack of pools and slough areas. A barrier falls is located about 250 yards above the stream mouth.

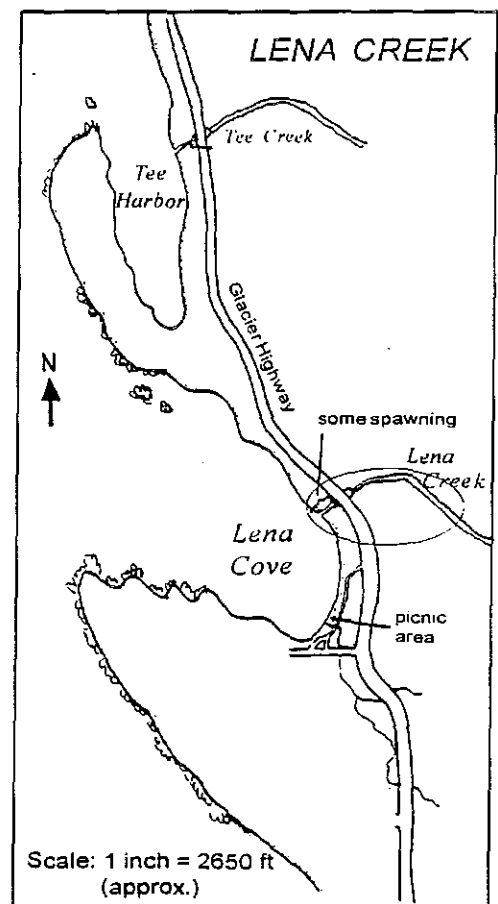


Figure 33.1 Lena Creek.

Fish Species Present

Lena Creek has populations of coho and pink salmon, Dolly Varden, and cutthroat trout. Two minnow traps set on July 27, 1970, caught 18 Dolly Varden and 19 cutthroat trout. The Dolly Varden appeared to be anadromous. Pink salmon escape-ments in Lena Creek in 1990 and 1994 were 300 and 422, respectively.

Lena Creek has not been stocked.

Public Use

The stream mouth is located in the U.S. Forest Service's Lena Cove Recreation Area. The beach area is used for various recreational activities, including fishing. The actual level of public use of Lena Creek is unknown.

Land Ownership

Lena Creek originates on U.S. Forest Service property and flows through land owned by the City and Borough of Juneau. The land near the stream mouth is privately owned.

Land Use

Lena Creek was impacted by the construction of Glacier Highway. One water withdrawal structure is located in lower Lena Creek.

Conclusion

Lena Creek is a small stream with marginal fishery values in its natural condition. The stream mouth is located in a public beach area. There is some potential to enhance the fishery values of the lower section of Lena Creek through the stabilization of the stream channel and placement of high quality spawning substrate.

Recommendations

The water quality of the stream and its fish habitat values should be maintained through critical review of land use permit applications.

Feasibility of enhancing spawning habitat downstream from Glacier Highway should be evaluated. ■

Chapter 34

Lemon Creek

Anadromous Stream Catalog Number:
111-40-10100

Location: Lat. 58°21'6" N.
Long. 134°30'23" W.
(5.9 Mile Egan Drive)

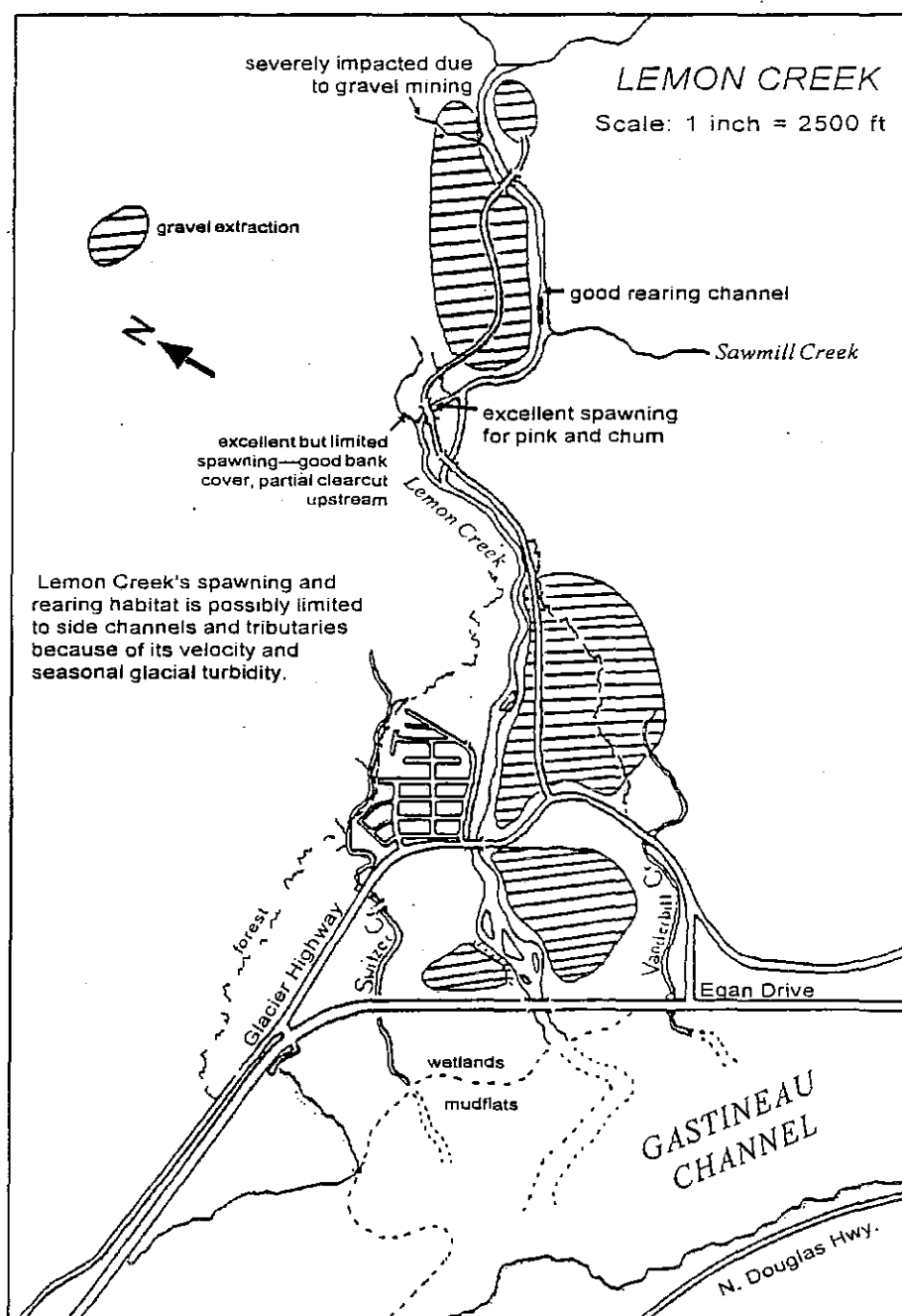


Figure 34.1 Lemon Creek.

Table 34.1. Salmon spawning escapement data for Lemon Creek.

YEAR	COHO SALMON	PINK SALMON	CHUM SALMON
1946	...	...	1 (09/21)
1968	...	...	2 (08/15)
1975	10 (11/07)	...	...
1976	10 (10/28)	...	...
1978	5 (10/16)	...	...
1979	0	...	...
1980	0	...	15 (09/02)
1981	0	11 (08/14)	18 (08/14)
1982	15 (10/20)	...	...
1983	11 (10/28)	...	...
1984	9 (10/16)	...	...
1985	2 (10/24)	80 (08/07)	280 (08/07)
1988	...	...	1210 (08/02)
1989	...	...	17 (08/09)
1990	...	...	...
1994	1 (09/07)	...	...

Description

Lemon Creek drains an area of approximately 25 square miles and runs about 6 miles in a southerly direction before draining into Gastineau Channel (figure 34.1, previous page). The stream's water level and flow varies considerably throughout the year, due to its glacial origin. In its lower sections, Lemon Creek runs from 30 to 50 feet wide and 1 to 3 feet deep during low flows.

The stream is fed by several large glaciers which cover nearly 30% of the watershed. The stream runs very glacial from spring through fall and clear during the cold winter months. The streambed substrate is mostly gravel, and its gradient is moderate.

Lemon Creek has at least 4 small clearwater tributaries that enter the mainstem from 1 to 3 miles upstream from the mouth.

Fish Species Present

Lemon Creek has stocks of Dolly Varden and coho, chum, and pink salmon. Four juvenile fish traps set on May 13, 1970 caught 14 Dolly Varden and 4 coho. An additional 300 Dolly Varden and 250 rearing coho were ob-

served. Salmon spawning escapement data for Lemon Creek are summarized above in table 34.1.

Fish Habitat

Only the lower two tributaries and lower 3 miles of Lemon Creek have been surveyed. These two tributaries are known to be used for both spawning and rearing. The second tributary (about 2 miles upstream on the east side of Lemon Creek) is known to have numerous upwelling areas.

Chum and coho salmon have been observed spawning in Lemon Creek's mainstem during late summer and fall.

Excellent rearing habitat is found in the clearwater tributaries, which are about 3 to 4 feet wide, 6 inches deep, and up to ½ mile long. Dolly Varden and coho are known to rear in the mainstem; however, it is presumed to provide only fair rearing at best, as it has little overhead cover and few rearing pools. There are no barriers on Lemon Creek.

Public Use

There is little public use of Lemon Creek except at the mouth of Lemon Creek in Gastineau Channel, which is a popular location for sport fishing.

Land Ownership

Lemon Creek originates on the Tongass National Forest. It flows through private property upstream from Glacier Highway and enters salt water on the Mendenhall Wetlands State Game Refuge.

Land Uses

Lemon Creek has been used as a source of gravel since historical times. Gravel is removed annually from Lemon Creek upstream from Glacier Highway. This section of the streambed is nearly 15 feet lower than it was historically. A haul road parallels Lemon Creek from Glacier Highway up to a private gravel mining operation in the second basin.

A commercial sanitary landfill is located adjacent to lower Lemon Creek. The refuse is surrounded by a large berm, but it is not known if this barrier is effective in preventing pollutants from leaking into lower Lemon Creek.

Conclusion

Lemon Creek is a glacial stream of moderate size compared to other local streams. Its fishery resources have never been thoroughly evaluated. The stream's fishery values have been—and continue to be—impacted by gravel removal.

Recommendations

It is apparent that Lemon Creek will continue to be used as a source of gravel. Stipulations to specific gravel mining proposals should be issued to protect the stream's fishery resources. As permits expire gravel extractors should be urged to move to upland sources of material. The fishery resources in Lemon Creek and its tributaries should be assessed. ■

Chapter 35

Little Sheep Creek

Anadromous Stream Catalog Number: None

**Location: Lat. 58°14'40" N.
Long. 134°17'30" W.
(just past the end of Thane Road)**

Description

Little Sheep Creek, a mile-long clearwater stream with a steep gradient, drains an area of over ½ square mile on the south side of West Peak and empties into Gastineau Channel just beyond the end of Thane Road (figure 35.1). The

stream is about 4 feet wide and 1 foot deep; stream flow has been estimated at 2 cfs, even during low flow periods in winter.

Fish Species Present

Little Sheep Creek has a run of pink salmon and a population of Dolly Varden.

Fish Habitat

Pink salmon spawn intertidally in Little Sheep Creek. Spawning habitat is sparse in the upper reaches, yet there is a sufficient amount to maintain a Dolly Varden population, which is assumed to consist of resident fish.

Little Sheep Creek offers little rearing habitat because of the steep gradient, poor overhead cover, and lack of slow-moving water. A barrier lies about 300 yards upstream from the mouth of the stream.

Public Use

The mouth of Little Sheep Creek receives some recreational angling pressure, even though the stream mouth is on private property.

Land Ownership

Little Sheep Creek originates on property administered by the Bureau of Land Management. The middle and lower reaches of Little Sheep Creek are located on private property.

Land Use

One private water supply is located in the lower section of Little Sheep Creek. Otherwise, the stream is in a nearly natural condition.

Conclusion

Little Sheep Creek is a small, clear, fast-flowing stream with overall low natural fishery values. The documented stream flow of 2 cfs during the cold winter months indicates that the stream is at least in part spring-fed.

Recommendations

The water quality of the stream should be maintained. The stream mouth appears to have potential for use as a saltwater release site for salmon smolts; such use would require an agreement with the private landowner. ■

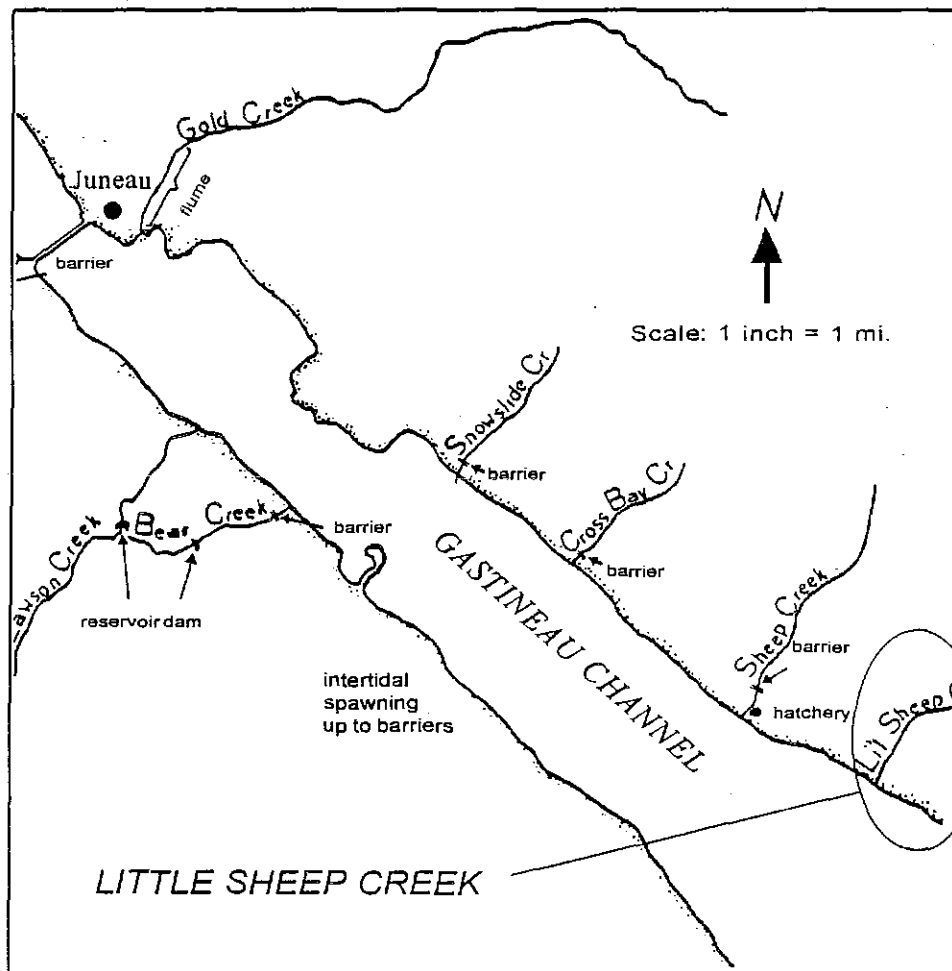


Figure 35.1 Little Sheep Creek.

Chapter 36

Marshall Pond and Mitchell Pond

Anadromous Stream Catalog Number: None

Location: Lat. 58°23'47" N.
 Long. 134°34'25" W.
 (south side of Taku Blvd. in Hidden
 Lakes subdivision in Mendenhall Valley)

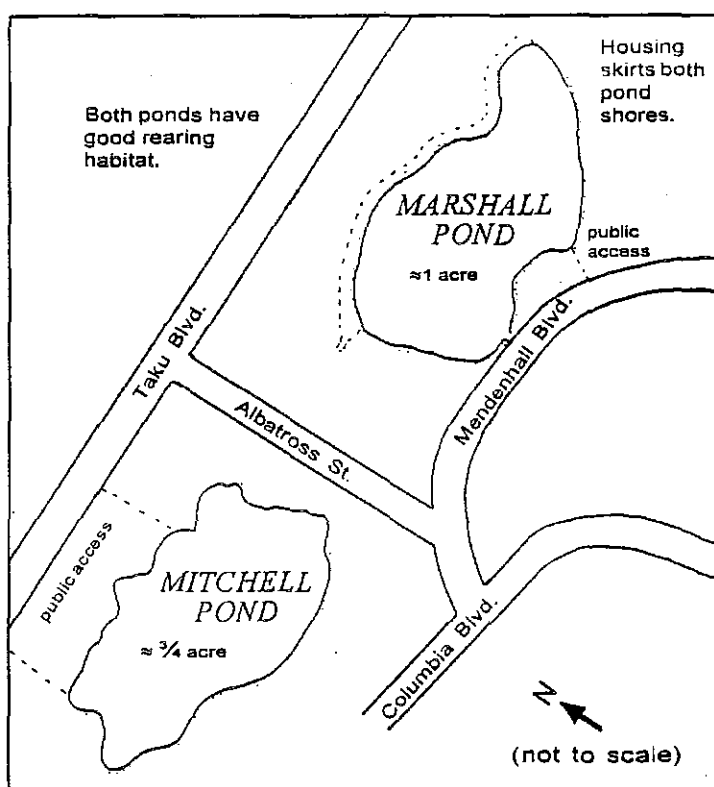


Figure 36.1
 Marshall
 Pond and
 Mitchell
 Pond.

Description

Marshall and Mitchell ponds are two small ponds located in the Hidden Lakes subdivision (figure 36.1). Marshall Pond is about 3/4 acre in size and 10 feet deep. Mitchell Pond is about 1 acre in size. Both lakes are surrounded by private homes, and most of the natural vegetation along the ponds' shorelines has been left intact. Neither pond has inlets or outlets. The bottom substrate of each is primarily mud.

Fish Species Present

At present, neither pond is believed to contain any fish. These ponds have been stocked several times since 1954; however, the records are confusing, and it is difficult to identify which of the pond(s) were actually stocked. The stocking record for "Marshall Pond" (which includes information for both Marshall and Mitchell ponds) is presented in table 36.1.

Fish Habitat

There is no spawning habitat available in either pond. Both ponds are known to contain abundant insect life and are presumed to be capable of providing good rearing conditions for small populations of fish.

Public Use

Marshall and Mitchell ponds have been favorite locations for neighborhood residents to fish, swim, and ice skate for many years. Stocked fish supported sport fisheries in these ponds for several years. This division has received several requests to stock these ponds, especially since the area surrounding the ponds has become a major residential area.

Land Ownership

Mitchell Pond is surrounded by at least 13 private lots, one of which is owned by the City and Borough of Juneau and can be used for public access.

Table 36.1. Stocking data for Marshall Pond.

DATE	SPECIES	NUMBER	SIZE	SOURCE
1954	rainbow	3,000	fry	Kodiak
1957	rainbow	1,100	fry	Kodiak
1958	rainbow	1,000	?	?
1959	rainbow	1,000	fry	Deer Mountain, Ketchikan
1960	rainbow	1,000	fry	Auke Creek
1960	rainbow	1,000	fry	Deer Mountain, Ketchikan
1961	rainbow	1,000	fry	Auke Creek
1963	rainbow	1,000	fry	Fire Lake, Anchorage
1967	rainbow	5,000	fry	Fire Lake, Anchorage
1968	rainbow	5,000	?	?
1969	rainbow	2,000	fry	Fire Lake, Anchorage
1971	rainbow	1,000	fry	Fire Lake, Anchorage
1974	coho	976	sub-smolt	Mendenhall Ponds, Juneau

Marshall Pond is surrounded by 11 private lots, one of which is also owned by the City and Borough of Juneau.

Land Uses

Both ponds are essentially surrounded by private homes. In some instances, rock fill has encroached into the lakes; however, the shorelines generally have fairly natural cover. Domestic drainage from these residences exits the area via the municipal sewage system, but the ponds are susceptible to pollution from surface drainage.

Conclusion

These two small lakes, each situated in the center of a residential development and having public access, provide some potential for developing two small neighborhood sport fisheries.

Recommendations

The feasibility of stocking these small ponds should be determined. Recreational fisheries could be best provided by stocking catchable-sized fish rather than fry, as were generally stocked in the past. It is presumed that stocked fish would receive heavy angling pressure from local neighborhood children. These fisheries could only be maintained by annual releases of fish.

Water quality in the ponds should be maintained by requiring all drainage into the ponds to meet the state's water quality standards. ■

Chapter 37

McGinnis Creek (also see Montana Creek)

Anadromous Stream Catalog Number:

111-50-10500-2003-3006

Location: Lat. 58°26'28" N.

Long. 134°38'40" W.

(tributary of Montana Creek, near the end of Montana Creek Road)

Description

McGinnis Creek is the main tributary to Montana Creek (figure 37.1). It is about 3 miles long, 15 feet wide, and 2–5 feet deep, with a moderate gradient, swift flow, and numerous pools. The stream-bed substrate ranges from large boulders to small gravel. The stream is seasonally glacial. The stream flow in McGinnis

Creek fluctuates greatly and moves a lot of bedload and large woody debris during floods.

A clear, spring-fed tributary called (unofficially) Spring Creek enters McGinnis Creek about ½ mile above the confluence of McGinnis and Montana Creeks. The stream is about ¼ mile long, 8 feet wide, and up to 1 foot deep.

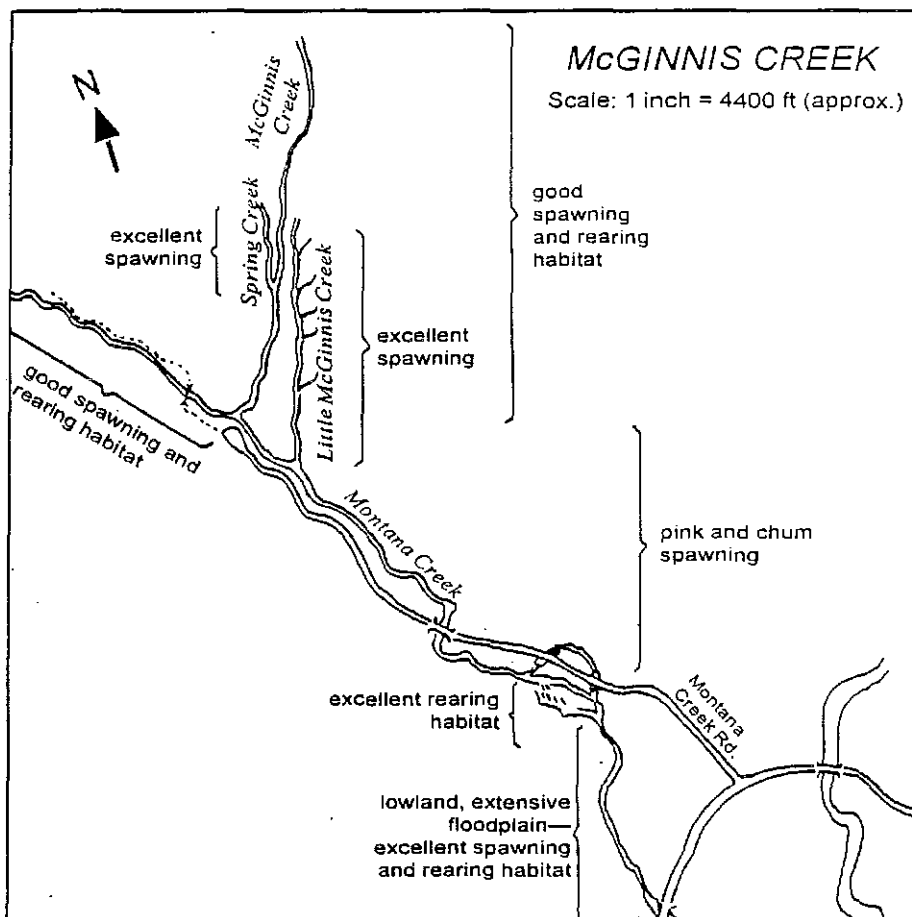


Figure 37.1 McGinnis Creek.

Fish Species Present

McGinnis Creek has populations of coho, chum, and pink salmon, Dolly Varden, and cutthroat trout.

McGinnis Creek has not been investigated using juvenile fish traps; however, on July 31, 1970 the following observations of rearing fish were made: 13 Dolly Varden fry, 43 coho fry and 1 fingerling, and 2 fry of undetermined species.

Salmon escapement data for this stream are presented in table 37.1.

Fish Habitat

Excellent pockets of spawning habitat are found throughout the length of McGinnis Creek. Spring Creek, its largest tributary, also has excellent spawning habitat.

Little McGinnis, a small tributary of Montana Creek, actually serves as a high-

flow channel for McGinnis Creek. Little McGinnis provides spawning habitat for salmon and Dolly Varden.

Good rearing habitat is dispersed throughout McGinnis Creek. Overall, the stream has a moderate gradient and the water flows quite fast; however, the stream has many deep pools with excellent instream and overhead woody cover.

There are no fish barriers on McGinnis Creek.

Public Use

McGinnis Creek receives some sport fishing pressure, especially in its lower reaches. The levels of effort and harvest are not known.

This stream is also used for recreational placer mining, which is quite restricted in order to protect the creek's fishery values.

Land Ownership

McGinnis Creek originates on the Tongass National Forest. The lower part of McGinnis Creek is located on State property.

Land Uses

McGinnis Creek has been subjected to placer mining activity for many years. Historically, a large mining operation was located in the stream's headwaters. At present, gold mining is limited to recreational gold panning and by small dredges, which are permitted only during the month of June. The stream is relatively safe from land uses other than mining.

Conclusion

McGinnis Creek is a moderate gradient, high-flow stream with an actively changing channel. The stream has an abundance of pools with excellent woody cover. McGinnis Creek is a very productive fish stream and provides a significant portion of the spawning habitat in the Montana Creek drainage.

Recommendations

The natural character and excellent fish values of this stream should be maintained through critical review of land-use permit applications.

The entire Montana Creek drainage should be placed in a fish habitat reserve or refuge status to protect its fishery values. ■

Table 37.1. Salmon escapement counts for Montana and McGinnis creeks. Counts include McGinnis, Spring, Little McGinnis, and Montana creeks upstream from the Back Loop Road bridge.

DATE	COHO	CHUM	PINK	SOCKEYE	CHINOOK
1960	...	many	...	...	...
1962	...	100 (8/10)	...	...	...
1966	...	331 (7/22)	...	...	...
1967	...	400 (8/11)	...	...	...
1968	...	800 (7/12)	...	...	...
1969	...	500 (7/23)	...	...	...
1975	...	80 (7/22)	50 (7/22)	...	...
1976	...	25 (7/16)	0	...	33
1977	...	440 (7/26)	8 (8/09)	...	348
1978	7 (11/30)	...	0	...	...
1979	...	614 (7/08)	0	...	...
1980	...	451 (8/31)	0	...	...
1981	227 (10/27)	...	0	...	17
1982	545 (10/20)	...	0	...	...
1983	636 (10/10)	1 (8/31)	917 (8/31)	210 (8/31)	...
1984	581 (10/29)	...	0	...	...
1985	810 (10/08)	2647	876 (7/30)	...	...
1986	60 (10/20)	320 (7/30)	...	...	...
1987	314 (10/08)	2913 (8/07)	773 (8/07)	...	...
1988	164 (10/21)	1397 (7/22)	...	...	...
1989	566 (10/23)	925 (7/19)	114 (8/11)	10 (7/17)	...
1990	1711 (10/03)	305 (8/01)	4 (8/30)	...	3 (8/30)
1991	1425 (10/16)	197 (8/07)	23 (8/14)	...	4 (8/07)
1992	2512 (10/12)	43 (8/04)	14 (8/05)	2 (7/17)	...
1993	1352 (10/08)	806 (7/29)	8 (7/29)	5 (7/29)	11 (8/16)
1994	1829 (09/30)	455 (7/27)	17 (8/03)	...	...

Chapter 38

Mendenhall Lake

Anadromous Stream Catalog Number:
111-50-10500-0020

Location: Lat. 58°25'24" N.
Long. 134°34'23" W.
(end of Glacier Spur Rd., Mendenhall Valley)

Description

Mendenhall Lake is located at the base of Mendenhall Glacier and forms the headwaters of the Mendenhall River (figure 38.1). The lake itself is glacial. It has three large tributaries: Nugget Creek, Steep Creek, and Campground Lake (covered in separate chapters), and at least three small clear tributaries on the west shore, included in this chapter.

Fish Species Present

Mendenhall Lake has populations of coho, pink, chum, and sockeye salmon, Dolly Varden, and cutthroat trout. The

lake has not been stocked, nor have fish traps been used; however, in 1970 data on Dolly Varden was collected with 40-foot-long vertical gillnets (table 38.1).

Table 38.1. Mendenhall Lake Dolly Varden gill net data, 1970.

DATE	NET HOURS	NO. FISH	RANGE (LBS)	LENGTH (IN.)
4/14/70	24	18	0.5-2.0	9-20
7/30/70	12	1	...	11¾
7/14/70	24	4	...	11-18
7/21/70	24	14	...	11-20
8/09/70	24	14	...	11-20

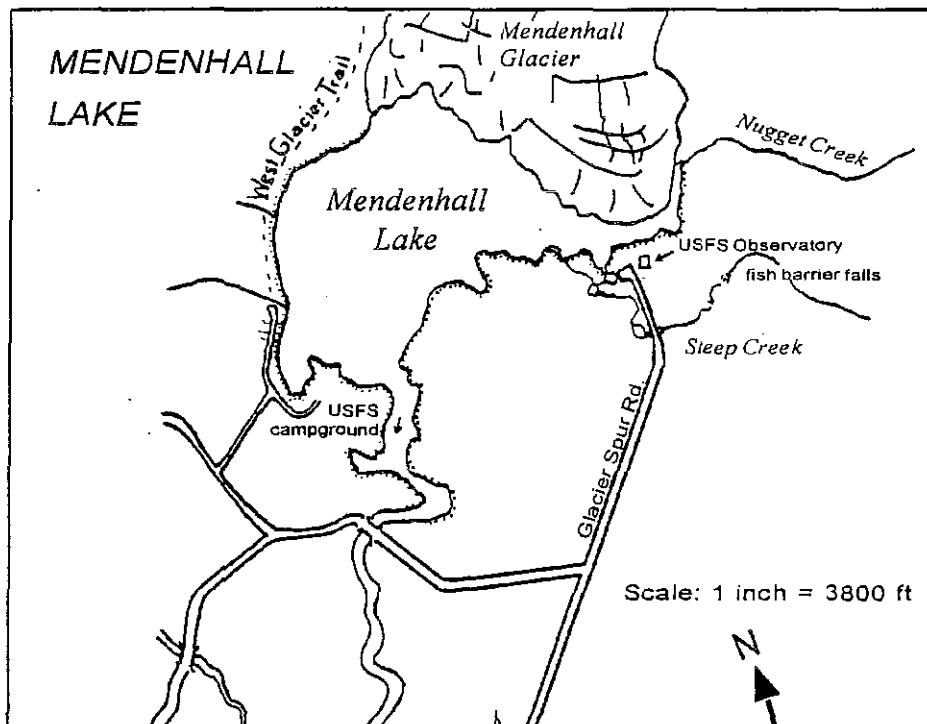


Figure 38.1 Mendenhall Lake.

Fish Habitat

Mendenhall Lake provides a cold, glacial rearing area for juvenile salmonids, including sockeye. The lake has been documented as an important overwintering area for adult Dolly Varden and cutthroat trout.

All tributaries of the lake except Nugget Creek provide additional rearing habitat of varying quality; however, the greatest value of the tributaries is for spawning. Steep Creek is the primary spawning area for Mendenhall Lake fish.

Public Use

Mendenhall Lake is located in the U.S. Forest Service Mendenhall Recreation Area. Access on the west is via the USFS Mendenhall Campground and Skater's Cabin Road; on the east, from the glacier observatory. The lake receives minor use from recreational fisherman in the winter; however, neither the level of effort nor harvest have been documented. The lake is also a favorite location for ice skating.

Steep Creek enters Mendenhall Lake near the glacier observatory and provides an excellent opportunity for viewing spawning salmon.

Land Ownership

Mendenhall Lake is on USFS land.

Land Use

The lake is relatively safe from any detrimental effects of land use activities.

Conclusion

The Mendenhall Lake system provides valuable rearing, spawning, and overwintering habitats for local salmonids. The lake's recreational opportunities are limited due to its glacial nature.

Recommendations

Maintain the current land status and public use of this lake system. ■

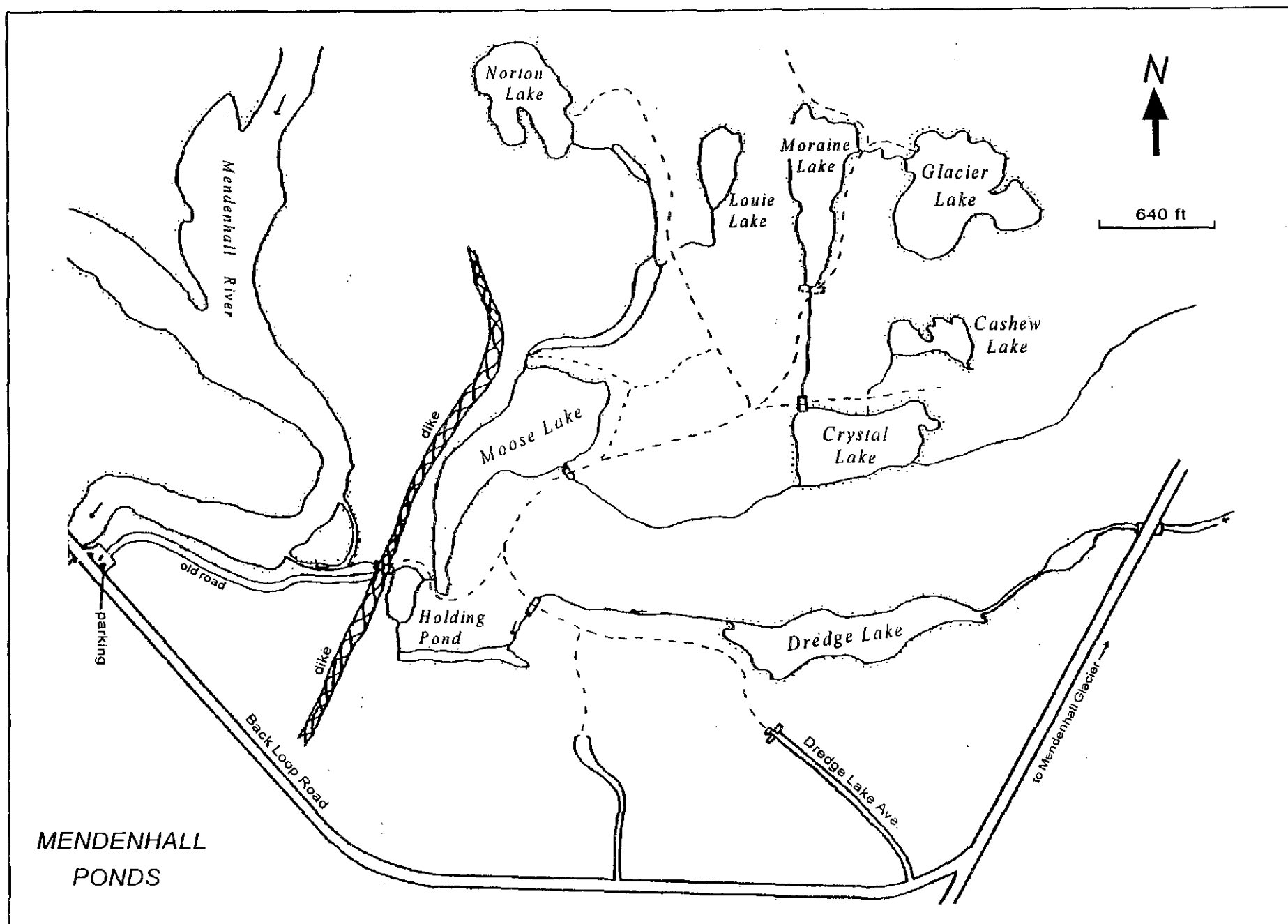


Figure 39.1 Mendenhall Ponds.

Chapter 39

Mendenhall Ponds

Anadromous Stream Catalog Number: None

Location: Lat. 58°24' N.

Long. 134°27' W.

(south of Mendenhall Lake and north of Mendenhall Loop Road)

Description

The area known as 'Mendenhall Ponds' comprises nine lakes ranging in size from about 2 acres to nearly 10 acres (figure 39.1). These lakes are located in the moraine area in front of Mendenhall Glacier. They are treated as a single watershed in this description, as all of them are located in the U.S. Forest Service Mendenhall Recreation Area, are subject to similar public and land use, and share a common outlet.

Four of the lakes are old gravel pits, and five are natural ponds. The natural ponds have a sandy, glacial-till substrate, whereas the excavated ponds have a gravel base. Their sizes and depths are listed in table 39.1.

Table 39.1. Name, size, and depth of lakes in the Mendenhall Ponds group.

LAKE	SIZE (ACRES)	DEPTH (FEET)	COMMENT
Cashew	1.7	7	natural
Crystal	5.4	6	excavated
Dredge	7.8	16	excavated
Glacier	5.5	25	natural
Holding Pond	0.7	15	excavated
Louie	1.7	6	natural
Moose	9.7	14	excavated
Moraine	4.3	12	natural
Norton	4.7	11	natural

Fish Species Present

The fish species present and the fishery habitat values of the Mendenhall Ponds are presented in table 39.2. The Mendenhall Ponds have a long history of fish stocking, which is provided in table 39.3.

Fish Habitat

CASHEW LAKE (figure 39.2)—This small natural lake is located in the headwaters of Crystal Lake. Cashew Lake has a sandy, glacial-till substrate and retains water throughout the winter, unlike Crystal Lake (only 50 yards away).

Cashew Lake provides good natural rearing habitat. The lake is also known locally as Q.T. Lake.

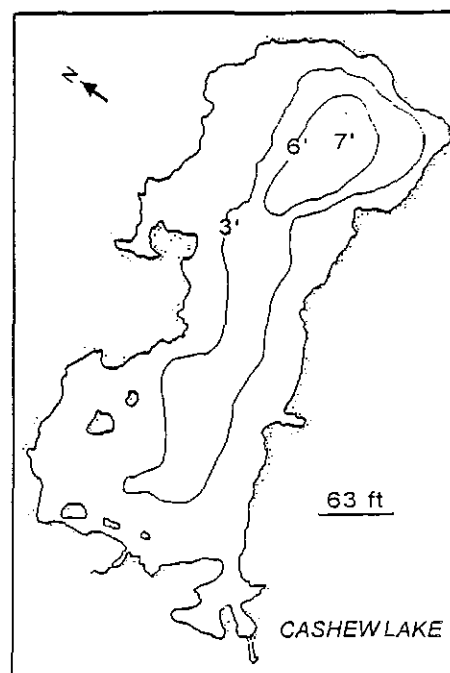


Figure 39.2 Cashew Lake.

CRYSTAL LAKE (figure 39.3, next page)—Located at the headwaters of Moose Lake, Crystal Lake is currently too shallow to retain water and sustain fish through the cold winter months. Observations through winter reveal that Crystal Lake drains subterraneously into the north end of Moose Lake, where upwelling can be observed. Coho salmon commonly spawn in the upwelling area in the north end of Moose Lake. Crystal Lake is also known locally as Green's Pond.

Table 39.2. Fish species present and habitat types in Mendenhall Ponds.

LAKE	FISH SPECIES PRESENT	ANADROMOUS	REARING HABITAT	SPAWNING HABITAT
Cashew	?	no	good	none
Crystal	?	no	none	none
Dredge	SS, PS, DV, CT	yes	excellent	limited
Glacier	SS, DV, CT	yes	excellent	limited
Holding Pond	SS, PS, DV, CT	yes	excellent	limited
Louie	?	yes	poor	none
Moose	SS, PS, DV, CT	yes	excellent	limited
Moraine	SS, DV, CT	yes	excellent	limited
Norton	SS, PS, DV, CT	yes	excellent	limited

SS = coho salmon PS = pink salmon DV = Dolly Varden CT = cutthroat trout

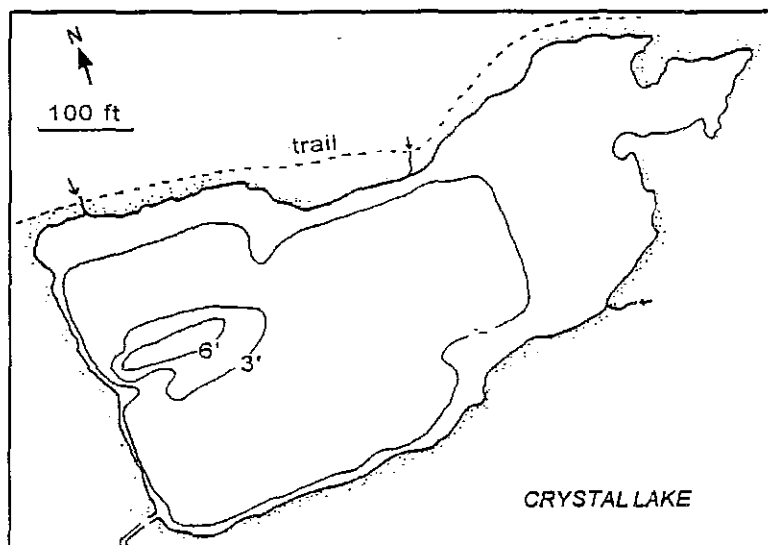


Fig. 39.3
Crystal
Lake.

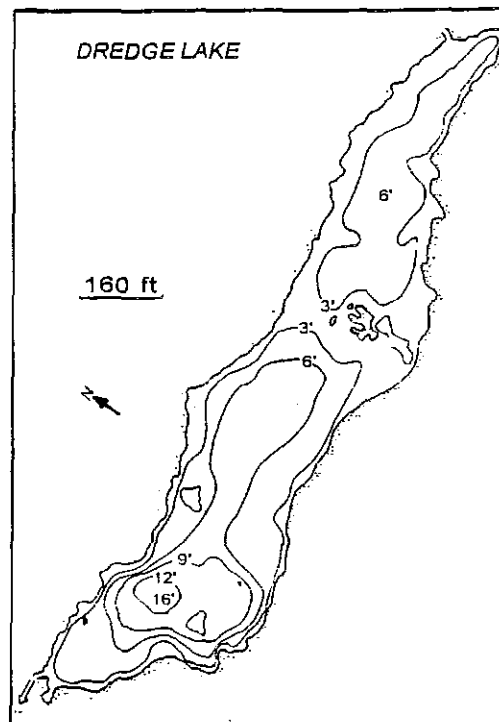


Figure 39.4 Dredge Lake.

DREDGE LAKE (figure 39.4)—The headwaters of Dredge Lake originate on Thunder Mountain, on the east side of the Mendenhall Valley. In this regard, Dredge Lake is unique; the other ponds in the system are fed by surface drainage from the immediate area.

Dredge Lake was originally included in the Mendenhall Ponds Salmon Rearing Facility, but it was dropped from rearing activities because the water flow fluctuated so drastically and rapidly that it could not be controlled. Dredge Lake has irregular bottom contours and provides deep areas for overwintering and

shallower areas covered with emergent vegetation throughout the summer. The lake shores have good overhanging cover of alder and willow.

GLACIER AND MORaine LAKES (figure 39.5)—These two lakes are connected with a small channel and separated from the rest of the drainage by trickle dams. Glacier Lake runs into Moraine Lake, and Moraine Lake drains from both the north and south end. Trickle dams were placed in both ends of Moraine Lake

in 1982 to retain stocked resident fish in the Glacier-Moraine lake system.

HOLDING POND (see figure 39.1)—This pond was excavated in 1972 and 1973 to serve as a source of gravel for construction of a dike between the Mendenhall Ponds system and the Mendenhall River. It also served as a holding pond for adult salmon returning to the rearing facility.

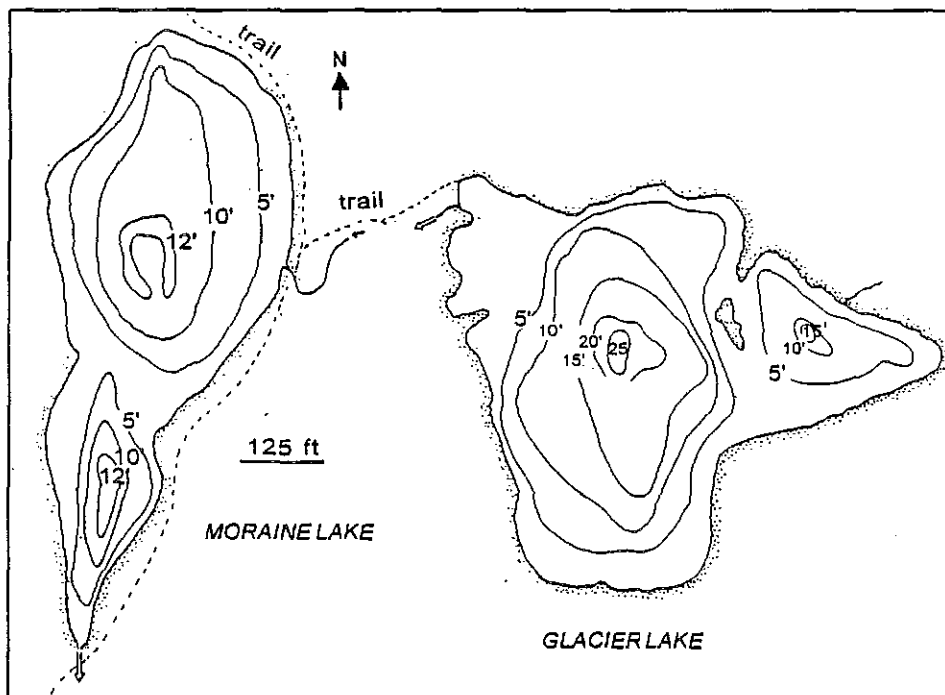


Figure 39.5 Glacier Lake and Moraine Lake.

The pond has control structures on the inlets from Dredge Lake and Moose Lake and on the outlet. Alder and willow growth along the shores of the holding pond have produced excellent overhanging cover.

LOUIE LAKE (figure 39.6, next page)—This small lake is by far the most eutrophic of all the Mendenhall Ponds. It has floating mats of thick, emergent vegetation along the shorelines, and the decomposition of natural matter is obvious from the strong odors at the lake.

In the summer, this small lake is often opaque from its heavy plankton content. Extremely low levels of dissolved oxygen have been documented in winter.

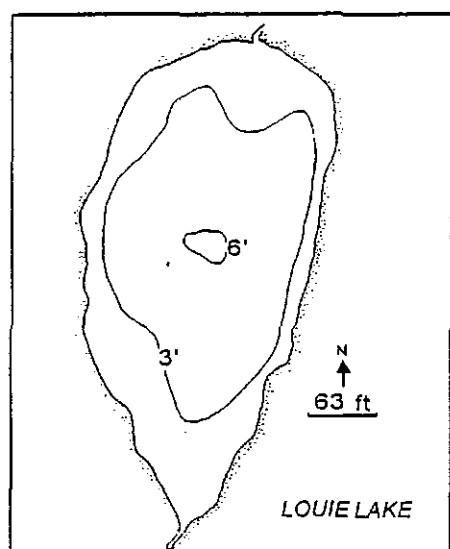


Figure 39.6 Louie Lake.

MOOSE LAKE (figure 39.7)—the largest lake in this system. Its substrate is sand and gravel. Moose Lake receives flow from the lakes located farther up in the Mendenhall Ponds drainage.

Moose Lake was drained and sculptured in 1973 to facilitate seining king and coho salmon smolts reared in the lake. Moose Lake was used for rearing activities for 3 years. The lake has a control structure on the outlet that can be used to contain fish in the lake.

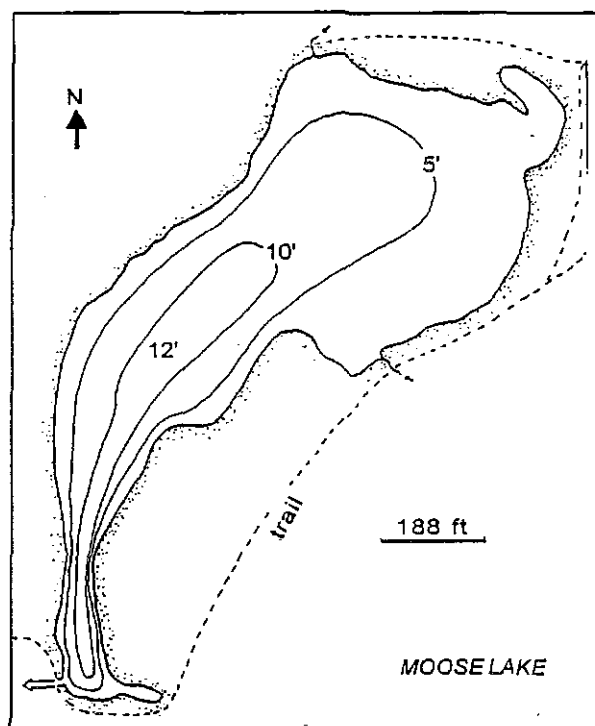


Figure 39.7 Moose Lake.

Since excavation, the shorelines of Moose Lake have assumed a natural appearance and are covered with thick alder and willow. Control structures provide free movement of water and fish.

NORTON LAKE (figure 39.8)—Located in the headwaters of the Moose Lake drainage, Norton Lake was also included in the activities of the Mendenhall salmon rearing facility.

Norton Lake is in a natural condition and has excellent cover and emergent vegetation along its shorelines. Norton Lake flows into Moose Lake through a shallow, vegetation-choked drainage.

Public Use

The Mendenhall Ponds area, located directly north of the most populated area in Juneau, provides many forms of outdoor recreation. The Mendenhall Ponds area has always provided local anglers with a significant opportunity to fish for wild stocks of coho salmon, Dolly Varden and cutthroat trout.

In 1987, Mendenhall Ponds was selected as a release site for inclusion in the Juneau Sport Fishing Enhancement Plan, and since that time coho salmon smolts have been released annually into Dredge Lake. The site has proven to be an excellent imprinting site, and adult coho salmon from the Mendenhall Ponds releases have contributed well to local commercial and marine sport fisheries, as well as to the terminal area sport fishery. Catch statistics for the 1988-90 terminal sport fishery at Mendenhall Ponds are presented below in table 39.4.

The Mendenhall Ponds have been closed to vehicle traffic since 1981; however, the old

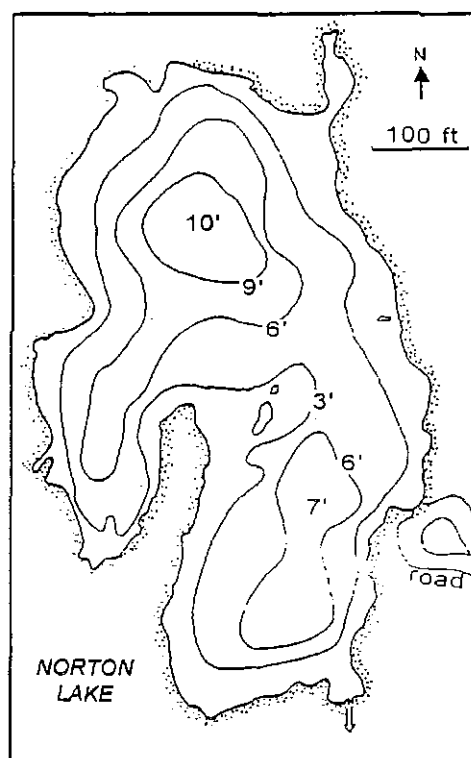


Figure 39.8 Norton Lake.

road system provides good hiking and jogging trails. The area also gets heavy use from waterfowl hunters and bird watchers.

Land Ownership

The Mendenhall Ponds system is included in the U.S. Forest Service Mendenhall Glacier Recreation Area.

Land Uses

Historically, this area was subjected to major gravel mining activities, but at present it is not vulnerable to degradation through adverse land uses. The USFS manages the area for public recreation, with an emphasis on protection of fish and game resources.

Conclusion

The Mendenhall Ponds system has had a very active past, including gravel removal, high public use, and fish stocking. This watershed provides over 35 surface acres of good fish habitat and one of the best opportunities for fishery enhancement in the Juneau area. All of the ponds containing fish are easily accessible, have clear water, and could provide additional angling opportunities for resident and anadromous fish.

Table 39.3. History of fish stocking in the Mendenhall Ponds.

DATE	SPECIES	NUMBER	SIZE	SOURCE	DATE	SPECIES	NUMBER	SIZE	SOURCE
CASHEW LAKE					6/11/68	grayling	50,000	fry	Fire Lake, AK
8/03/54	eastern brook	1,000	...	Kodiak, AK	1974	rainbow	4,030	fry	...
1958	rainbow	1,000	fry	Kodiak, AK	1976	cutthroat trout	349	adult	Shelter Lake, AK
1960	rainbow	2,000	...	...	1982	cutthroat trout	354	adult	Shelter Lake, AK
1961	rainbow	1,000	...	...	HOLDING POND				
1963	rainbow	1,000	...	...	9/16/74	king	124,309	29/lb	Crystal Lake, AK
1964	rainbow	1,000	...	...	6/24/75	coho	96,679	31/lb	Crystal Lake, AK
1967	rainbow	2,000	...	...	6/76	coho	42,231	42kg	Crystal Lake, AK
1968	rainbow	2,500	...	...	5/77	coho	22,816	46kg	Crystal Lake, AK
1969	rainbow	2,000	...	...	4/77	coho	10,097	68kg	Crystal Lake, AK
1971	rainbow	1,000	...	Fire Lake, AK	LOUIE LAKE				
DREDGE LAKE					6/19/53	eastern brook	1,000	...	Auke Creek, AK
1931	eastern brook	...	...	...	1963	rainbow	5,000	fry	Fire Lake, AK
6/19/53	eastern brook	2,000	...	Auke Creek, AK	1965	rainbow	5,000	fry	Auke Creek, AK
8/07/73	coho	138,896	260/lb	Blind Slough, AK	1967	rainbow	2,400	fingerling	Fire Lake, AK
6/07/76	coho	545,300	450/lb	Dredge Lake, AK	1968	rainbow	2,500	...	...
5/77	coho	11,095	495/lb	Crystal Lake, AK	1969	rainbow	1,990	fingerling	Fire Lake, AK
6/01/84	coho	199,893	fry	Mtn Creek, AK	MOOSE LAKE				
5/17/85	coho	20,225	11.7gr/fish	Speel Lake, AK	9/25/73	king	155,078	30/lb	Carson R., WA
1987	coho	52,879	3.4 gm	Speel Lake, AK	9/16/74	coho	209,485	...	Mendenhall, AK
1988	coho	50,000	fry	Speel Lake, AK	6/24/75	coho	149,500	300/lb	Mendenhall, AK
1989	coho	37,000	fry	Speel Lake, AK	6/07/76	coho	545,000	450/lb	Mendenhall, AK
11/89	coho	30,000	fry	Snettisham	5/00/77	coho	15,272	495kg	Mendenhall, AK
GLACIER & MORaine LAKES					11/89	coho	70,000	fry	DIPAC
1954	rainbow	8,000	fry	Kodiak, AK	NORTON LAKE				
8/08/55	rainbow	2,500	fry	Kodiak, AK	6/19/53	eastern brook	1,000	fry	...
1956	rainbow	10,600	...	Kodiak, AK	1963	rainbow	5,000	...	...
1958	rainbow	9,000	fry	Kodiak, AK	1965	rainbow	5,000	...	...
1959	rainbow	8,000	fry	Deer Mountain, AK	8/03/67	rainbow	5,000	...	...
1960	rainbow	8,000	fry	Deer Mountain, AK	7/23/68	rainbow	4,000	...	...
1960	rainbow	5,000	fry	Auke Creek, AK	1969	rainbow	4,000	...	...
1961	rainbow	10,000	fry	Auke Creek, AK	8/07/73	coho	120,848	264/lb	Blind Slough, AK
1963	rainbow	10,000	fry	Fire Lake, AK					
1965	grayling	20,000	fry	Fire Lake, AK					
1965	rainbow	15,000	fry	Fire Lake, AK					

Recommendations

The fishery values of the Mendenhall Ponds system should be enhanced and maintained for future fish production and provision of angling opportunity.

Recreational fishery values could be improved by stocking resident species into Glacier and Moraine lakes and by stocking coho salmon smolts into anadromous waters in the drainage. Resident fish should be stocked annually to provide for yearlong sport fisheries.

Table 39.4. Catch statistics for the 1988–1990 terminal sport fishery at Mendenhall Ponds.

DATE	ANGLER HOURS	CATCH	
		COHO	DOLLY VARDEN
1988 (09/12–10/23)	464	245	157
1989 (08/28–11/05)	740	1074	107
1990 (09/10–11/4)	258	155	10

Coho salmon would provide excellent seasonal fishing and would reduce angling pressure on local wild stocks. Coho salmon escaping the fisheries would spawn in Mendenhall Ponds and fill the rearing capacity of the area. ■

Chapter 40

Mendenhall River

Anadromous Stream Catalog Number:

111-50-10500

Location: Lat. 58°21'28" N.

Long. 134°36'23" W.

(flows through center of Mendenhall Valley; crosses Glacier Hwy. at 10.0 mile)

Description

Mendenhall River is glacial and heads in Mendenhall Lake. It flows approximately 5 miles through the center of the Mendenhall Valley and enters salt water in Fritz Cove (figure 40.1, following page). Montana Creek (see Chapter 41) enters the Mendenhall River 1 mile upstream from Glacier Highway, and Duck Creek (see Chapter 15) enters the river near the Juneau airport.

Fish Species Present

Mendenhall River has populations of coho, pink, chum, and sockeye salmon; cutthroat and steelhead/rainbow trout; and Dolly Varden. Eulachon (smelt) can be found in the lower stretches in spring.

The river has not been stocked. The river is a migration route for Montana Creek and Steep Creek stocks of fish. Refer to chapters on those streams for spawning or escapement data on fish that use the Mendenhall River.

Fish Habitat

Because of its size and its glacial character, the fish habitat values of this river have never been fully assessed.

The mainstem of the Mendenhall River is used by fish primarily as a migration route to the spawning areas in the upper watershed. As many as 15,000 salmon of all species, and 30,000 Dolly Varden, migrate up the Mendenhall River annually. Coho salmon are known to

spawn in Mendenhall River between the outlet of Mendenhall Lake and Mendenhall Loop Road bridge.

The Mendenhall River provides significant amounts of rearing habitat for coho. Juvenile Dolly Varden may be found in numerous small glacial sloughs and near the mouths of small clear tributaries. There are no fish barriers on the Mendenhall River. The extensive tidal wetlands adjacent to the river mouth are within the Mendenhall Wetlands State Game Refuge and are very important to juvenile salmonids making the freshwater-saltwater adaptation.

Public Use

Mendenhall River provides good sport fishing at the mouth of Montana Creek and, to a lesser degree, at the mouth of Mendenhall Ponds. The glacial character of the Mendenhall River is not conducive to sport fishing.

A local tour business has recently begun float trips on the Mendenhall River during the summer season.

A trail system has been developed by this Division, in cooperation with the City and Borough of Juneau, which runs upstream along the river from Brotherhood Bridge to the mouth of Montana Creek.

Land Ownership

Mendenhall River heads on USFS land and flows downstream through private and City and Borough of Juneau holdings.

Land Use

Mendenhall River flows through the most densely populated area in Juneau. Thus, the river is vulnerable to many land use activities. Historically, gravel was mined from several gravel bars along the Mendenhall River. Many of the operations left depressions in which fish could be trapped and lost during low water levels. Gravel is no longer being removed from the Mendenhall River.

The banks of the river have been stabilized with rip-rap in some sections to prevent erosion of private property. Probably the greatest threat to the Mendenhall River is polluted drainage from residential areas and industrial sites adjacent to the river. The old Red-Samm gravel pit on the east bank upstream from Glacier Highway is suspected to be a source of chemical pollutants that are draining into the river. The City and Borough's Mendenhall Valley sewage treatment plant is located by the river near the airport, and the treatment plant outfall lies in the river.

Conclusion

Mendenhall River is a large glacial river that runs through the center of a highly developed residential and industrial area. The river and wetlands near its mouth have very high fish and wildlife values, yet they are vulnerable to adverse impacts from many potential land uses that could occur in the watershed.

Recommendations

The water quality of the stream should be maintained. Streamside corridors should be acquired to provide protection to the natural stream banks, rather than eventually stabilizing them all with rip-rap.

A water quality monitoring program should be implemented in the lower river to determine levels of chemical pollutants present and to provide necessary data to enforce state water quality regulations. ■

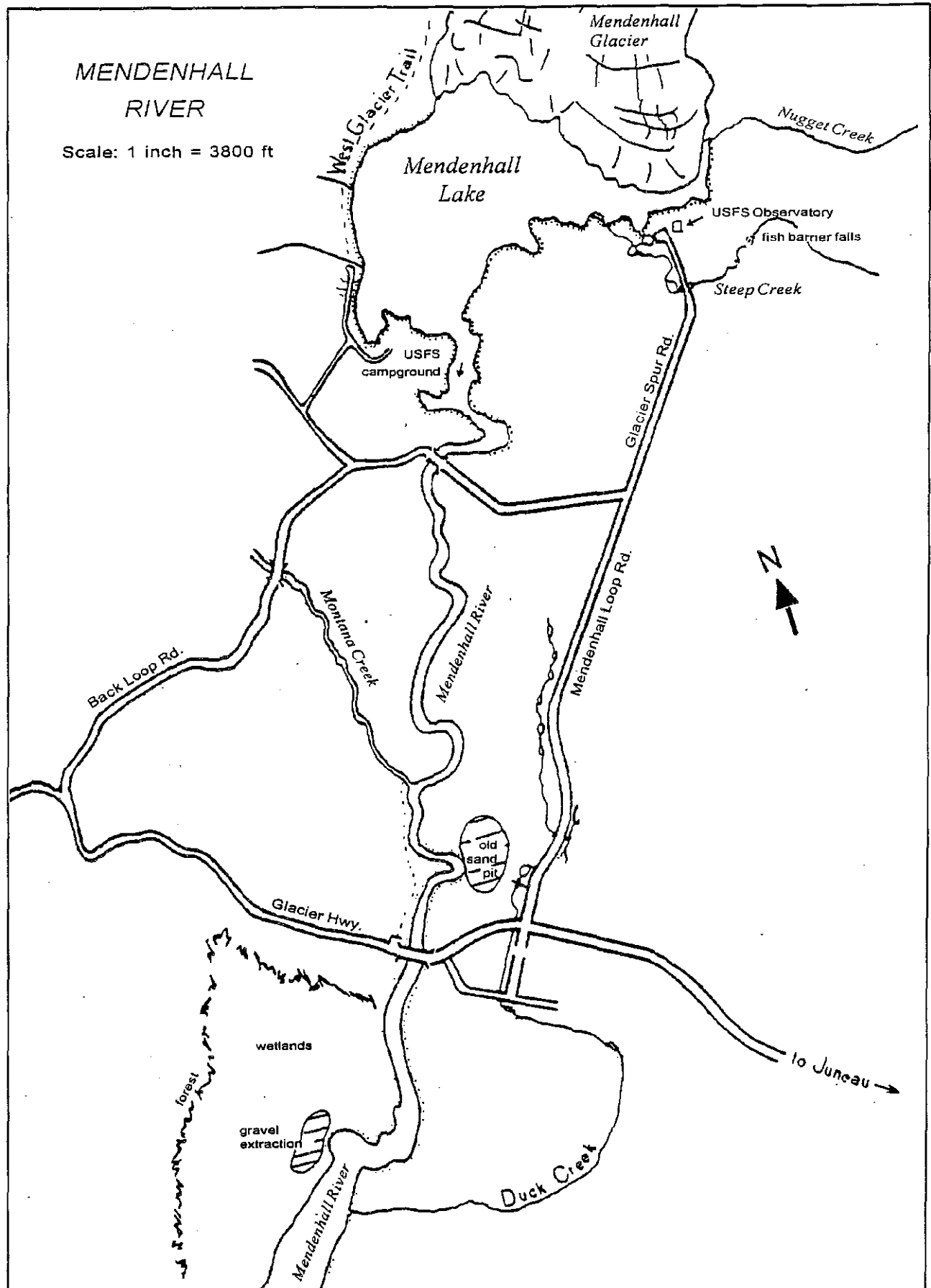


Figure 40.1 Mendenhall River.

Chapter 41

Montana Creek

Anadromous Stream Catalog Number:
111-50-10500-2003

Location: Lat. 58°22'54" N.
Long. 134°35'47" W.
(west side of Mendenhall Valley)

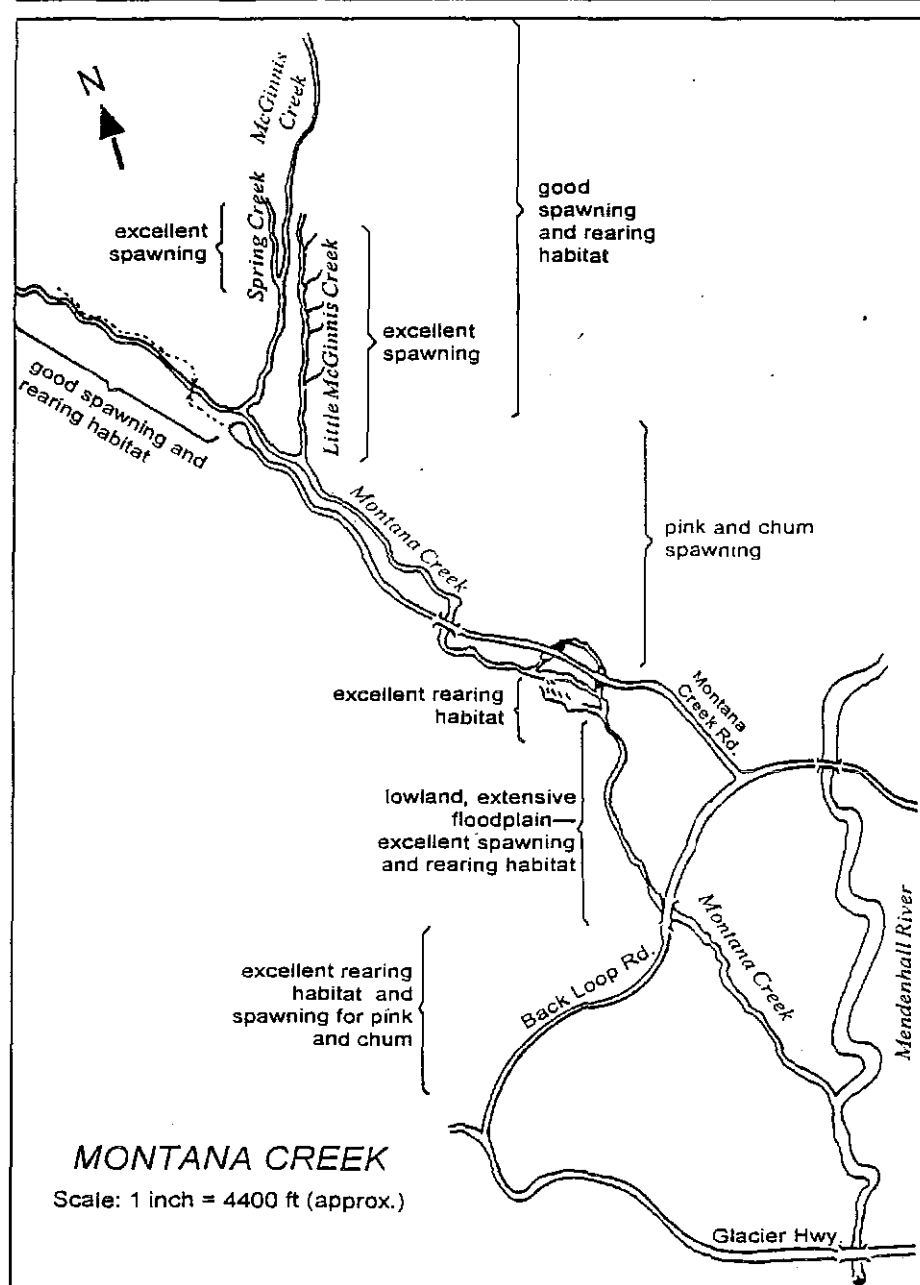


Figure 41.1 Montana Creek.

Description

Montana Creek is the largest tributary to the Mendenhall River. It originates in a high mountain meadow and flows for approximately 8 miles before entering the Mendenhall River about 1 mile upstream from Glacier Highway (figure 41.1).

The watershed drains a 15-square-mile area. The stream gradient varies from steep in the upper drainage to low in the lower section. The water is clear with a brownish tint.

McGinnis Creek (Chapter 37) is the main tributary of Montana Creek and actually provides more water to the Montana Creek system than the headwaters of Montana Creek.

Little McGinnis Creek (unofficial name) enters Montana Creek about ¼ mile downstream from the end of the Montana Creek road. It is a clear, spring-fed stream approximately ¾ mile long and 6 feet wide at its mouth. McGinnis Creek at flood levels actually flows down Little McGinnis Creek.

Fish Species Present

Montana Creek has wild stocks of coho, pink, chum, and sockeye salmon, cutthroat and rainbow/steelhead trout, and Dolly Varden.

King salmon adults straying from the Mendenhall Ponds salmon rearing facility spawned in Montana Creek from 1976 through 1978 but did not produce a self-perpetuating run.

Montana Creek has a very small run of wild steelhead. In 1976, 1986 and 1987, steelhead smolts were released into Montana Creek to provide new sport fisheries; however, these releases were not successful, and viable fisheries failed to develop.

Montana Creek fish populations have been documented through minnow trap surveys and salmon escapement counts. Minnow fish trap data for Montana Creek are presented in table 41.1.

Table 41.1. Summary of rearing fish trapping results for Montana Creek.

DATE	STREAM/LOCATION	NO. TRAPS	SPECIES CAUGHT		
			COHO SALMON	DOLLY VARDEN	CUTTHROAT TROUT
08/03/70	various points	20	102	130	5
10/05/77	rifle range area	10	266	103	1
09/10/84	above Mendenhall Loop Rd.	8	393	3	1
09/11/84	Beaver Slough	7	495	99	0
09/11/84	Montana Creek Rd. slough	1	109	12	0
09/17/84	above Montana Creek bridge	7	112	33	0

Salmon escapement counts have been conducted on Montana Creek on an infrequent basis since 1960 (table 41.2). Montana Creek is a very important producer of coho and chum salmon for Juneau area fisheries.

A Dolly Varden mark and recapture population study conducted on Montana Creek in 1983 revealed that at least 19,000 Dolly Varden (ranging in length from

about 6 inches and larger) utilized Montana Creek during the summer season. This study, and the existing information on rearing fish, indicates that Montana Creek is a major producer of Dolly Varden in the Juneau area.

In 1952 and 1953, Montana Creek was seeded with nearly 180,000 eyed king salmon eggs, in an attempt to develop a king salmon run in the stream.

The effort, however, was not successful. From 1986 through 1989, Montana Creek was stocked with over 144,000 king salmon smolts which had been reared at Snettisham Hatchery. Montana Creek lacked a good "holding" area in which to imprint the king salmon smolts, and consequently, returns from the smolt releases were poor. The king salmon stocking program in Montana Creek ended in 1989.

Approximately 31,000 steelhead smolts (total) were stocked into Montana Creek in 1986 and 1987, but returns were poor, and only a small return of adults to the stream was generated for one year. Approximately 6,000 steelhead smolts from Snettisham Hatchery were released in 1990 into Montana Creek; however, this did not prove to be a viable enhancement program.

Fish Habitat

The Montana Creek drainage provides a wide variety of fish habitat. In the upper reaches, the water flows fast, and there are numerous pools with excellent overhead and instream woody cover.

In the middle section, the gradient is lower and the pools are larger. In the lower section, the gradient is low, and the stream provides excellent rearing conditions for coho salmon and cutthroat trout.

Chum and coho salmon, Dolly Varden, and cutthroat trout spawn in the middle and upper reaches, with the heaviest spawning occurring in the upper mainstem of Montana, Little McGinnis, and McGinnis creeks.

Numerous small inlets are found in the wetlands adjacent to the lower, mainstem and they provide excellent seasonal rearing habitat.

Public Use

Montana Creek has been a favorite location for sport fishing for many years. Conservative Dolly Varden fishing regulations reduced angling effort for a period of years, and Montana Creek is currently the only stream

Table 37.1. Salmon escapement counts for Montana and McGinnis creeks. Counts include McGinnis, Spring, Little McGinnis, and Montana creeks upstream from the Back Loop Road bridge.

DATE	COHO	CHUM	PINK	SOCKEYE	CHINOOK
1960	...	many	...	...	...
1962	...	100 (8/10)	...	...	...
1966	...	331 (7/22)	...	...	...
1967	...	400 (8/11)	...	...	...
1968	...	800 (7/12)	...	...	...
1969	...	500 (7/23)	...	...	...
1975	...	80 (7/22)	50 (7/22)	...	...
1976	...	25 (7/16)	0	...	33
1977	...	440 (7/26)	8 (8/09)	...	348
1978	7 (11/30)	...	0	...	...
1979	...	614 (7/08)	0	...	...
1980	...	451 (8/31)	0	...	...
1981	227 (10/27)	...	0	...	17
1982	545 (10/20)	...	0	...	...
1983	636 (10/10)	1 (8/31)	917 (8/31)	210 (8/31)	...
1984	581 (10/29)	...	0	...	...
1985	810 (10/08)	2647	876 (7/30)	...	...
1986	60 (10/20)	320 (7/30)	...	...	...
1987	314 (10/08)	2913 (8/07)	773 (8/07)	...	...
1988	164 (10/21)	1397 (7/22)	...	...	...
1989	566 (10/23)	925 (7/19)	114 (8/11)	10 (7/17)	...
1990	1711 (10/03)	305 (8/01)	4 (8/30)	...	3 (8/30)
1991	1425 (10/16)	197 (8/07)	23 (8/14)	...	4 (8/07)
1992	2512 (10/12)	43 (8/04)	14 (8/05)	2 (7/17)	...
1993	1352 (10/08)	806 (7/29)	8 (7/29)	5 (7/29)	11 (8/16)
1994	1829 (09/30)	455 (7/27)	17 (8/03)	...	...

Table 41.3. Angler effort and harvest data at Montana Creek, by species and sampling period, for years 1983, 1985, 1986, and 1987.

YEAR	SAMPLE PERIOD	ROD HOURS	DOLLY VARDEN	CHUM SALMON	PINK SALMON	COHO SALMON	CUTTHROAT TROUT
1983	04/23-10/01/83	1,262	315	0	211	0	0
1985	07/08-10/27/85	529	653	64	10	0	0
1986	07/07-09/29/86	1,750	343	17	0	0	127
1987	04/20-10/11/87	2,316	292	0	0	26	93
TOTALS		5,857	1,603	81	221	26	220

open to sport fishing that is restricted to the use of artificial lures only.

Montana Creek presently provides thousands of angler hours of effort. It is a favorite place to fish for wild trout and salmon on the Juneau road system. Angling effort and sport catch data for Montana Creek are presented above in table 41.3.

The ADF&G Sport Fish Division, in cooperation with the City and Borough of Juneau (CBJ), constructed an angler access trail from the mouth of Montana Creek upstream to the rifle range bridge in 1989. This trail is used extensively, both by anglers and by hikers. Montana Creek and its adjacent flood plains are also used by the public for outdoor study.

Land Ownership

Montana Creek heads on U.S. Forest Service property and flows through state, private, and CBJ holdings.

Land Use

A gravel road impacts a section of Montana Creek. Sedimentation from the road and pollution from three households on the floodplain currently pose the greatest habitat problem for Montana Creek.

There is some recreational gold mining activity in Montana Creek. Panning is allowed any time of year; however, the use of small dredges is allowed only during the month of June.

In the future, Montana Creek could be subjected to many land use activities that could impact its fisheries values. CBJ owns large parcels of stream bank property, and it would be advantageous for CBJ to hold the property for public recreation uses.

Conclusion

Montana Creek is an excellent producer of fish, provides excellent public

access, and presently receives a high level of public use. The stream is located close to the densely populated areas in Mendenhall Valley. Future land use development could have impacts on the stream and its fishery values.

Recommendations

Montana Creek should be designated a top priority fish stream and given protective status to maintain its excellent fishery values and public access. Proposals for streamside development must be critically reviewed to prevent degradation of its habitat values.

The feasibility of excavating a streamside salmon smolt release facility should be determined. Such a pond would provide an excellent facility for imprinting hatchery-reared chinook and steelhead smolt to the Montana Creek system, and it would provide additional rearing habitat. ■

Chapter 42

Neilson Creek

Anadromous Stream Catalog Number:
111-40-10960

Location: Lat. 58°19'57" N.
Long. 134°29'51" W.
(4.4 mile North Douglas Highway)

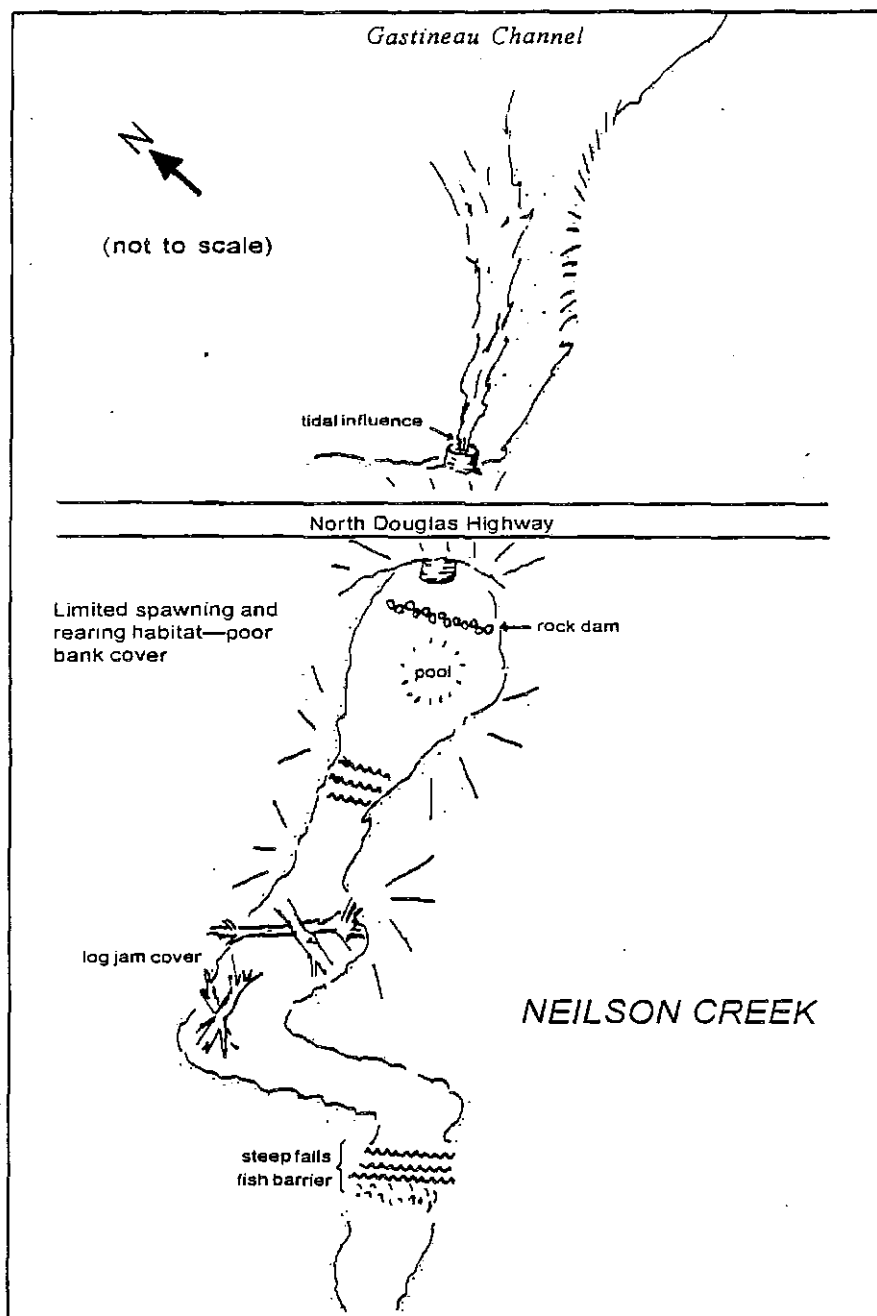


Figure 42.1 Neilson Creek.

Description

Neilson Creek drains an area of about 2 square miles on Douglas Island. The stream runs for approximately 1 mile and flows into Gastineau Channel (figure 42.1). The stream has a high gradient and is 5-12 feet wide at the highway crossing.

The main streambed substrate is gravel and bedrock. The water is clear, with a brownish tint. Only the lower section of the stream was surveyed. The stream has a barrier falls approximately 300 yards above the stream mouth. Tidal influence extends upstream to the highway culvert.

Fish Species Present

Neilson Creek has populations of coho and pink salmon and Dolly Varden. It is presumed that a resident population of Dolly Varden exists above the barrier. The stream has not been stocked.

Juvenile fish data collected below the barrier at Neilson Creek are summarized as follows:

Neilson Creek minnow trap data			
Date	No. traps	Coho salmon	Dolly Varden
6/29/70	2	0	10
9/7/85	3	1	35

Fish Habitat

The overall rearing potential in Neilson Creek is low because of the high gradient, fast water, and lack of pools and cover. The main spawning habitat is located in the upper intertidal area. There is a barrier falls on the stream about 300 yards above the stream mouth.

Public Use

Neilson Creek itself receives little public use. Gastineau Channel, off the mouth of Neilson Creek, is a popular location for sport fishing.

Fish taken in this area may be destined for other streams in Gastineau Channel; however, the fish tend to mill off the

nearby heliport, because of the topography of Gastineau Channel and the creek's freshwater influence.

Land Ownership

Neilson Creek originates on U.S. Forest Service property and flows through private and City and Borough of Juneau property.

Land Use

Surface drainage from a subdivision on the east side of the stream could impact Neilson Creek. Construction of the proposed 'bench road' could also impact this stream. One water withdrawal permit is on file for Neilson Creek.

Conclusion

Neilson Creek is a small stream with limited fishery values, primarily due to a fish barrier and a lack of rearing area. The stream does provide a sufficient volume of water to support enhanced spawning habitat in the intertidal area.

Recommendations

Water quality in the stream should be maintained. The feasibility of enhancing intertidal spawning habitat through channel stabilization and placement of spawning substrate should be investigated. ■

Chapter 43

Ninemile Creek

Anadromous Stream Catalog Number:
111-50-10670

Location: Lat. 58°20'13" N
Long. 134°34'26" W
(7.5 mile North Douglas Highway)

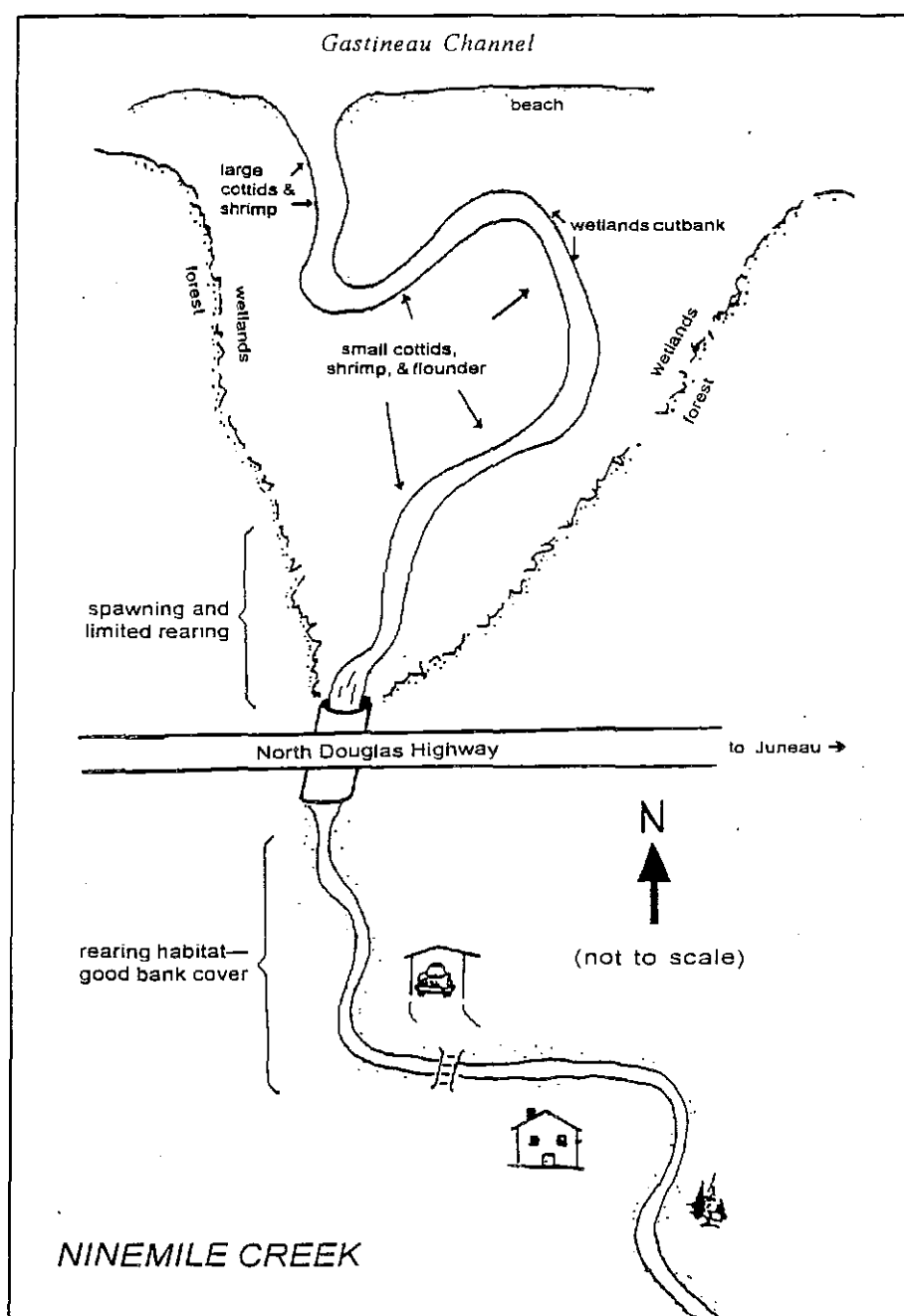


Figure 43.1 Ninemile Creek.

Description

Ninemile Creek flows for approximately 1.5 miles in a northerly direction on Douglas Island before emptying into Gastineau Channel (figure 43.1, previous page). The lower ½ mile of Ninemile Creek is intertidal and meanders through open grassy meadows adjacent to Gastineau Channel. The stream is about 3 feet wide at the highway culvert and has pools up to 12 inches deep. The water is clear, with a brownish tint.

Streambed substrate in the upper section of the creek is primarily gravel; mud and silt dominate in its lower section.

Fish Species Present

Ninemile Creek has populations of coho and chum salmon, Dolly Varden, and cutthroat trout. Several marine fish species are found in the long intertidal area. The stream has not been stocked.

Four fish traps set in Ninemile Creek on June 29, 1970 collected 23 cutthroat trout and 5 Dolly Varden, but no juvenile coho. On August 29, 1984, a small dip net was used to collect 33 juvenile coho and 1 Dolly Varden.

Salmon escapement data for Ninemile Creek are limited:

YEAR	COHO	CHUM
1976	2	...
1984	2	4

Fish Habitat

Ninemile Creek is small but provides good rearing habitat. The long intertidal area provides excellent rearing for juvenile marine species and is also an important factor in the survival of anadromous salmonids emigrating from Ninemile Creek and other streams in the Gastineau Channel area.

Spawning habitat is restricted to the upper intertidal area and small pockets in the upper reaches of the stream. The stream bottom has heavy moss growth throughout the system. There is excellent overhead brush cover in the upper reaches and overhanging grass cover in the intertidal area. There are no known fish barriers on the stream, but several log jams may be blocks to migration at some water levels.

Public Use

None known.

Land Ownership

Ninemile Creek heads on U.S. Forest Service property and flows through private and state holdings.

Land Use

Ninemile Creek is not vulnerable to significant impacts from land use; however, the streamside property may be subject to future residential development.

There is one private water supply on the creek.

Conclusion

Ninemile Creek is small yet productive for its size. Overall, its fishery values are low because of its small size.

Recommendations

Maintain water quality in the stream. Determine the feasibility of enhancing intertidal spawning habitat by stabilization of the streambed and by introduction of high quality spawning substrate. ■

Chapter 44

North Tee Creek

Anadromous Stream Catalog Number:
111-50-10200

Location: Lat. 58°26'10" N.
Long. 134°45'48" W.
(flows under Cohen Drive near Glacier Hwy.)

Description

North Tee Creek flows south about 1 mile and enters salt water in the north end of Tee Harbor (figure 44.1). At its

mouth, the stream is 3 to 4 feet wide and 1 foot deep. The water is clear, with a brownish tint. Stream gradient is moderate throughout its length.

North Tee Creek branches into two main forks downstream from Cohen Drive. Each branch is 2 to 4 feet wide and up to 18 inches deep. At least four small tributaries of North Tee Creek are crossed by Glacier Highway.

Fish Species Present

North Tee Creek has populations of coho, pink, and chum salmon, Dolly Varden, and cutthroat trout. This stream has not been stocked.

Fish Habitat

Good spawning habitat is found throughout North Tee Creek. Pink and chum salmon spawn from the intertidal area upstream to just below Cohen Drive. Coho salmon spawn from the intertidal area to above Cohen Drive.

North Tee Creek provides excellent rearing habitat throughout its length. In its lower reaches, the stream has many pools with excellent overhead and instream cover. Upstream from Cohen Drive, the stream canopy is more open, with overhanging grass and many undercut banks. An old beaver colony exists on the left fork upstream from Cohen Drive.

The culvert under Cohen Drive on the right fork may be a barrier to upstream migration.

There are no historical escapement counts for this stream, but a survey conducted on August 23, 1985 revealed 1,996 pink and 8 chum salmon in the stream, and on August 9, 1990, biologists counted 851 pink salmon in the stream.

Public Use

Not known

Land Ownership

North Tee Creek upstream from Cohen Drive is on City and Borough of Juneau (CBJ) property. Downstream from Cohen Drive, the stream runs through private property.

Land Use

North Tee Creek was impacted by the construction of Cohen Drive. One culvert may be a barrier to fish migration. North Tee Creek runs near the center of a CBJ land disposal tract. Thus, residential development poses the greatest threat to the stream's fishery values. In at least one instance, a private lot being filled was responsible for a heavy amount of sediment being washed into the stream. Several private water withdrawal systems are situated on the stream.

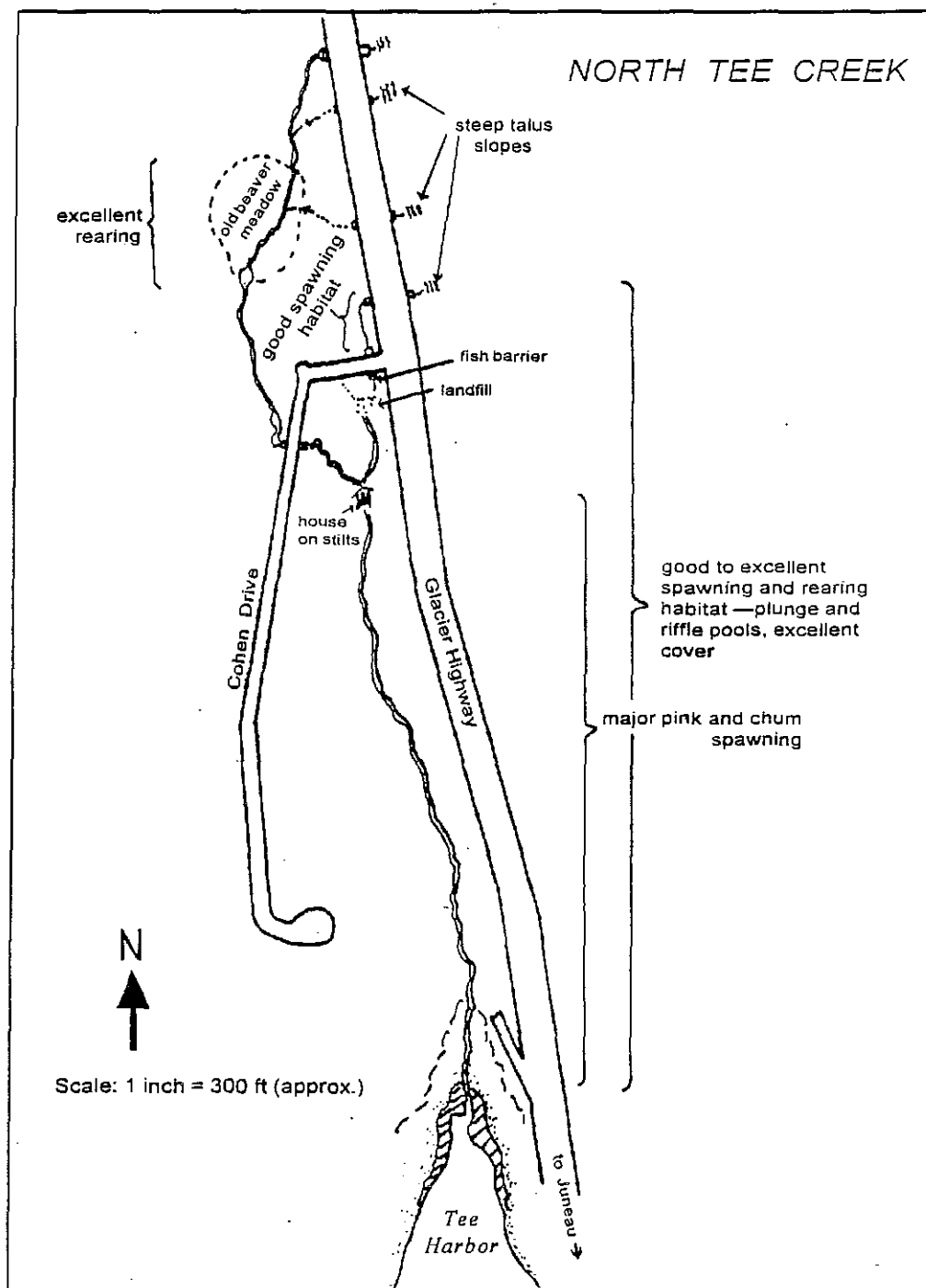


Figure 44.1 North Tee Creek.

Conclusion

North Tee Creek is a small but valuable stream in regard to fish habitat. The stream is actually much longer and drains a larger area than one would think, judging from the size of the stream at the mouth. To date, the stream has been impacted little from adverse land uses, but it could be exposed to significant land use impacts through residential development.

Recommendations

The fishery values of this stream should be maintained through critical review of land use permit applications. Development must be located as far from the stream as possible and buffers provided to allow natural filtering of surface drainage. Maintaining the excellent fishery values of this small stream will add considerable value to the neighborhood through which it runs. ■

Chapter 45

Nugget Creek

Anadromous Stream Catalog Number:
111-50-10500-2010

Location: Lat. 58°25'07" N.
Long. 134°32'25" W.
(east side of Mendenhall Lake)

Description

Nugget Creek heads at Nugget Glacier and runs approximately 5 miles in a westerly direction before entering Mendenhall Lake near the base of Mendenhall Glacier (figure 45.1; see also figure 40.1, page 82). A glacial stream, Nugget Creek drains an area of

approximately 15 square miles. It has a high gradient and a series of cascades at the mouth which are a barrier to upstream migration.

Fish Species Present

Nugget Creek has a population of resident Dolly Varden. The stream has

not been trapped; however, 10 Dolly Varden up to 8 inches in length were observed in the stream in June 1970.

The stream was evidently stocked with eastern brook trout sometime prior to statehood, but records are lacking.

Fish Habitat

The rearing potential in Nugget Creek is quite low, due to its swift, cold, glacial water and lack of pools or slow-moving water. Perhaps the best 'pool' in Nugget Creek exists behind a 25-foot-high wooden dam constructed by the Juneau Gold Mining Company about ½ mile above the stream mouth.

Public Use

Nugget Creek receives attention from recreational gold miners and hikers who traverse the Nugget Creek Trail. The stream is not known to provide any sport fishing, but it could provide a good opportunity during non-glacial periods for fishing a small mountain stream.

Land Ownership

Nugget Creek is located on U.S. Forest Service property.

Land Use

Nugget Creek has been impacted by historic mining activities; however, the impacts on fish habitat values were probably slight because of the stream's low fishery values. Nugget Creek could be subjected to mining activities in the future.

Conclusion

Nugget Creek is a picturesque, fast-flowing, mountain stream with relatively low fishery values.

Recommendations

Maintain the natural water quality of the system. ■

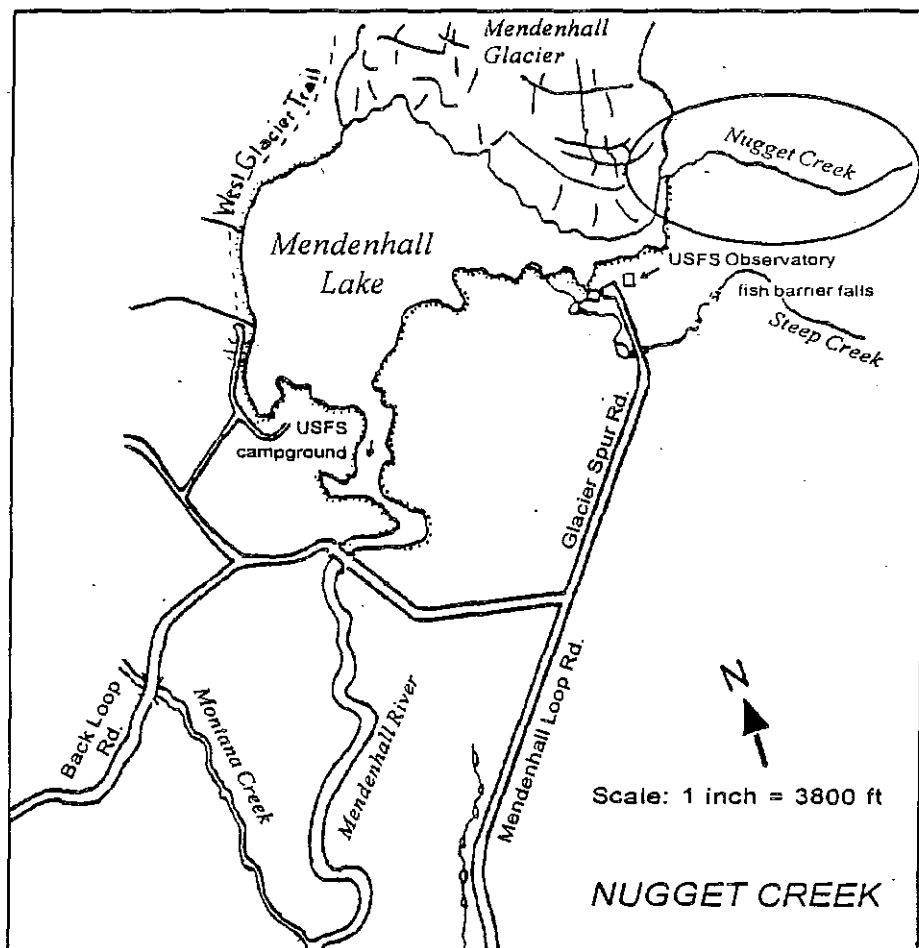


Figure 45.1 Nugget Creek.

Chapter 46

Peterson Creek (25 Mile)

Anadromous Stream Catalog Number:
111-50-10100

Location: Lat. 58°29'45" N.
Long. 134°46'44" W.
(24.5 mile Glacier Highway)

Description

Peterson Creek heads in Peterson Lake, north of Auke Mountain, and flows for approximately 7 miles in a northwesterly direction before emptying into salt water in Favorite Channel (figure 46.1). A lagoon (Peterson Lagoon) lies directly upstream from salt water. It is inundated by salt water only on high tides.

The stream gradient is moderate to low from the lagoon to a lower barrier falls about 1 mile upstream. There are two branches between the lower falls and Glacier Highway. From the lower barrier falls upstream to Peterson Lake, the gradient ranges from moderate to high with numerous bedrock pools. Several falls are located 1 mile downstream from the lake and are believed to be a barrier to upstream fish movement. Peterson Creek has at least six tributaries below the lower barrier falls which provide excellent fish habitat.

Fish Species Present

Peterson Creek has populations of coho, pink, and chum salmon, rainbow/steelhead and cutthroat trout, and Dolly Varden. Juvenile rearing fish populations in Peterson Creek have been well documented in the past.

In 1970, Peterson Creek (from Glacier Highway upstream to the barrier falls) was selected as a study area to determine habitat preferences and seasonal movements of rearing coho salmon. A summary of juvenile fish trap data collected in the study is presented in table 46.1. Salmon spawning escapement data are presented in table 46.2.

Small rainbow trout are numerous upstream from the barrier falls and downstream from the lake; they can be easily observed in the pools. In the early 1960's, Peterson Lake was rehabilitated with rotenone and stocked with steelhead and rainbow trout to develop a rainbow fishery (table 46.3). The rehabilitation was not successful, and the lake presently contains populations of small Dolly Varden and a few rainbow trout.

Peterson Creek downstream from the barrier falls has provided the most

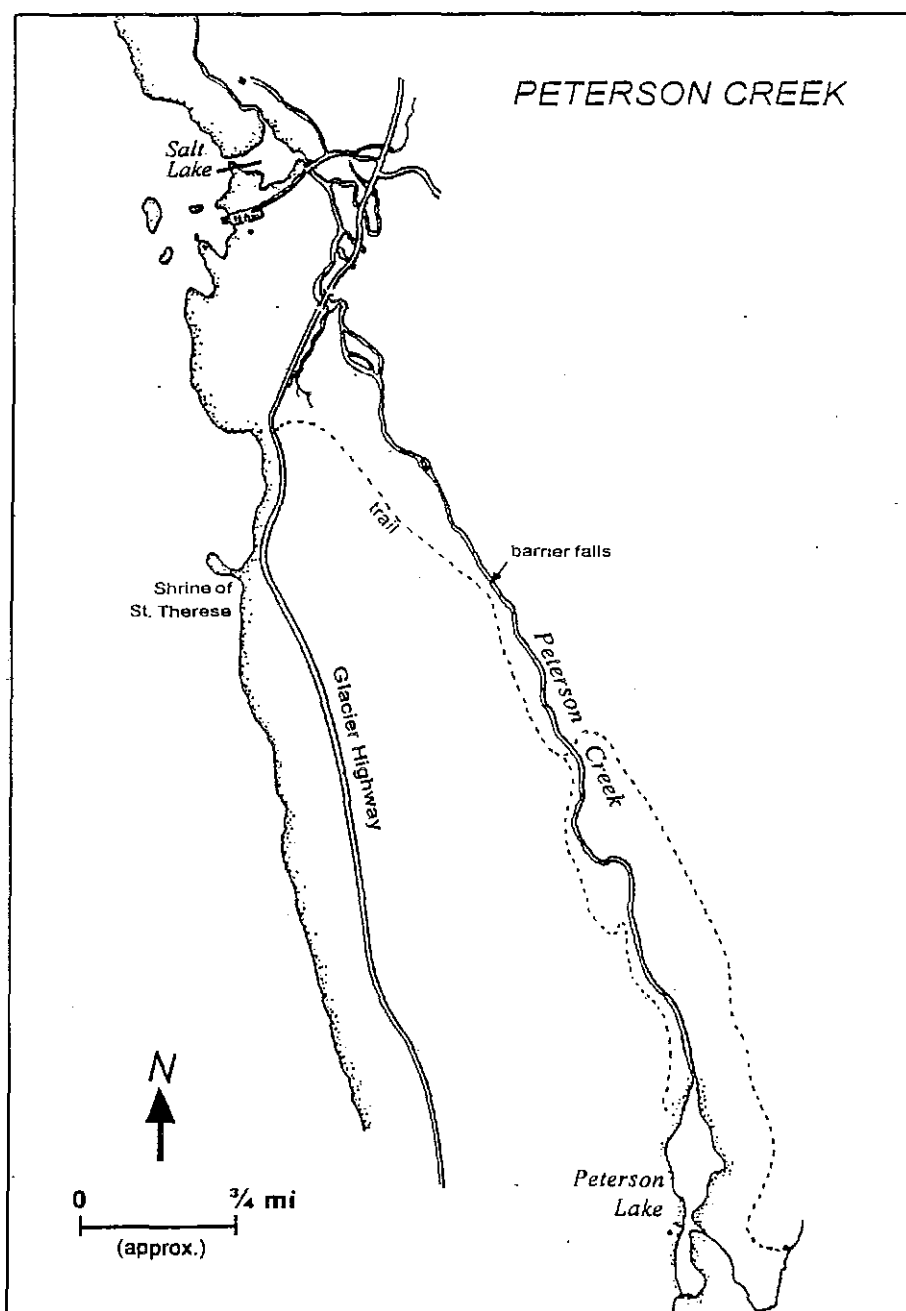


Figure 46.1 Peterson Creek.

popular steelhead fishery on the Juneau road system for many years. The Sport Fish Division operated a steelhead weir on lower Peterson Creek from 1989 through 1991. Steelhead escapement data are also presented in table 46.2.

Rearing steelhead are not as numerous in the anadromous section of Peterson Creek as one would think, given the level of adult escapement. Evidently, the lagoon at the mouth of Peterson Creek provides the major rearing habitat for juvenile steelhead on the Peterson Creek system.

Amalga Harbor, at the mouth of Peterson Creek, has been used as a release site by Douglas Island Pink and Chum Inc. for a cost recovery site since 1990. Large numbers of chum salmon fry are released annually. A barrier-escapement control net is used in the stream mouth to prevent over-escapement of chum salmon into the creek.

Fish Habitat

Peterson Creek runs through a steep-sided gorge for approximately ¼ mile downstream from the barrier falls. The stream has a high gradient, with bed-rock pools and larger boulder substrate in this area. Rainbow trout and Dolly Varden are the predominant rearing species in the gorge.

Downstream from the gorge to Glacier Highway, the stream has a low to moderate gradient and many pools interspersed with riffle areas, and the streambed substrate consists of smaller gravel. In this area, the stream has many overhanging banks with excellent overhead and instream woody cover. Coho salmon are the predominate rearing species below the gorge.

From Glacier Highway downstream to the saltwater lagoon, the stream gradient is low. This section runs through meadows and has nearly continuous overhanging banks with grass cover. The salt lagoon at the mouth of Peterson Creek provides an excellent area for anadromous fish to undergo their freshwater-saltwater physiological changes. The salt lagoon, about 30 acres in area, has a maximum depth of about 50 feet. Crabs and marine species

Table 46.1. Summary of minnow trap catch data collected at Peterson Creek, 6/2/70 to 5/25/71.

DATE	No. TRAPS	MEAN CATCH PER TRAP							
		COHO			DV	RT	CT	CO	SB
		(age-0)	(1 & II)	Total					
06/02/70	19	0	15.8	15.8	0.7	0.4	0	0.3	5.2
07/02/70	20	0.5	12.1	12.6	3.2	0.8	0.1	1.2	5.3
08/03/70	19	2.6	10.8	13.4	4.7	1.5	0	2.0	0.1
09/04/70	16	8.6	11.2	19.8	3.6	0.3	0	2.5	0
10/02/70	18	13.3	10.5	23.8	1.4	0.7	0	2.4	0
11/03/70	20	20.4	6.8	27.3	0.3	1.4	0	0.2	0
12/09/70	18	29.1	13.2	42.3	2.5	1.1	0	0.2	0.2
01/11/71	11	28.4	9.5	37.8	1.2	0.1	0	0	0
02/19/71	14	14.1	2.6	16.7	0.1	0.1	0	0.1	0
03/19/71	16	12.8	5.4	18.2	0.2	0.4	0	0	0
04/20/71	20	6.8	5.0	11.8	0.1	0.2	0	0	0
05/25/71	20	7.0	1.8	8.8	0.2	0	0	0	0.2
AVERAGE	17.6	11.2	8.8	20.0	1.5	0.6	0.01	0.8	1.0
DV = Dolly Varden CT = cutthroat trout SB = stickleback RT = rainbow trout CO = cottids									

Table 46.2. Salmon and steelhead trout escapement data for Peterson Creek. Dates (month and day) of counts are shown in parentheses.

YEAR	COHO	PINK	CHUM	STEELHEAD
1962	...	100 (08/27)	...	...
1963	...	1,625 (08/27)	...	...
1973	...	730 (08/08)	...	...
1975	...	250 (08/28)	...	...
1976	...	...	...	...
1977	...	510 (08/11)	...	...
1978	38 (10/26)	...	...	...
1979	...	5,003 (08/30)	...	...
1981	183 (10/29)	706 (07/28)	...	...
1982	320 (10/15)	1,000 (08/05)	...	...
1983	219 (10/06)	1,500 (08/05)	...	...
1984	189 (10/11)	400 (08/09)	...	...
1985	276 (10/15)	5,650 (08/08)	2,675 (08/08)	...
1986	363 (10/13)	...	...	28 (05/04)
1987	204 (10/07)	2,102 (08/20)	1,901 (08/20)	35 (05/15)
1988	542 (10/10)	500 (07/08)	3,366 (08/11)	0
1989 ¹	242 (10/05)	1,353 (08/25)	874 (08/08)	222
1990 ¹	324 (10/10)	2,834 (08/28)	1,980 (08/28)	179
1991 ¹	420 (10/15)	50 (07/31)	500 (07/31)	212
1992 ²	403 (10/12)	427 (08/07)	760 (08/07)	15 (05/11)
1993 ²	112 (10/21)	55 (08/31)	32 (08/31)	20 (05/03)
1994 ²	318 (09/27)	4,019 (08/03)	50,000 (07/20) ³	4 (04/26)

¹ Number of steelhead counted into Peterson Creek through the weir, not the number of fish actually counted while spawning in the stream.

² Numbers of steelhead surveyed and electroshocked.

³ Aerial count of fish at stream mouth, enhancement returns.

Table 46.3. Record of fish stocked in the Peterson Creek system.

DATE	SPECIES	NUMBER	SIZE	SOURCE
1919	pink salmon	3,300,000	eyed eggs	...
06/17/41	steelhead	8,600	eyed eggs	Ward Lake
06/17/41	steelhead	10,000	eyed eggs	Ward Lake
1960-1962	grayling	...	eyed eggs	...
08/10/61	steelhead	14,300	...	...
08/12/61	steelhead	4,615	...	...
08/08/62	steelhead	6,500	1,100/lb	...
07/30/63	steelhead	21,028	1,865/lb	...
08/07/64	steelhead	17,388	700/lb	Pleasant Bay
08/00/66	steelhead	17,000	1,200/lb	...
08/00/66	steelhead	17,000	700/lb	...
08/00/67	steelhead	12,000	800/lb	...
1968	steelhead	15,000	...	...

inhabit the bottom of the lagoon, which is inundated by high tides.

Public Use

Peterson Creek has been a favorite stream utilized for recreational angling since historical times. The stream has one of only three small runs of steelhead in the Juneau area, attracting a lot of attention in the spring.

The first recreational fishery harvest survey was conducted at Peterson Creek in 1983. Since that time surveys have been conducted in 1989 and 1990 (table 46.4).

It should be noted that, in 1983, Peterson Creek produced 100% of the steelhead taken on the Juneau road system. In its contribution of coho

salmon to the roadside fishery, it was second only to Cowee Creek.

Public access along Peterson Creek through private property is presently available upstream from Glacier Highway on the west side of the stream; however, it could be eliminated should the property owners decide to post signs.

Land Ownership

Peterson Creek heads on the Tongass National Forest and flows through state and CBJ property from the gorge to Amalga Harbor.

The property which lies downstream from Glacier Highway and around the salt lagoon belongs to the City and Borough of Juneau.

Land Use

Peterson Creek has been impacted in the past through construction of Glacier Highway and Amalga Harbor road and logging on private property upstream from Glacier Highway. The area which was logged was purchased by the state to protect the stream and small tributaries in the area.

Residential areas could be developed on the private holdings adjacent to the stream, upstream from Glacier Highway.

Conclusion

Peterson Creek is a very valuable producer of fish for local fisheries, and it provides significant angling opportunity. The stream is presently in a nearly natural condition, yet it is vulnerable to future impacts from highway and residential development.

Recommendations

The extremely high fish production and recreational values of Peterson Creek should be maintained through a critical review of land use permit applications and enforcement of the State's water quality regulations. The stream should be designated as a 'high value fish stream' and given the maximum level of protection possible.

Public access should be required along both sides of Peterson Creek. Public access corridors along both shores of Peterson Creek should be acquired to protect these biologically rich areas for future public use. ■

Table 46.4. Angler effort and harvest data by species and number of fish kept and released on Peterson Creek for sampling periods in 1983, 1989, and 1990.

SAMPLE PERIOD	ROD HOURS	DOLLY VARDEN		SILVER SALMON		PINK SALMON		CHUM SALMON		CUTTHROAT TROUT		STEELHEAD TROUT		RAINBOW TROUT	
		Kept	Rel.	Kept	Rel.	Kept	Rel.	Kept	Rel.	Kept	Rel.	Kept	Rel.	Kept	Rel.
04/17-09/28/83	1,526	9	205	104	54	9	0	0	0	9	18	18	0	0	9
10/02-10/29/83	192	10	15	14	24	0	0	0	0	0	0	0	0	0	0
03/27-06/04/89	2,121	181	457	0	0	0	0	0	0	0	48	22	17	10	22
04/02-06/05/90	2,581	81	2,243	0	0	0	0	0	0	62	170	18	34	0	0
TOTALS	6,420	311	2,920	118	78	9	0	0	0	71	236	58	51	10	31

Chapter 47

Peterson ('Outer Point') Creek

Anadromous Stream Catalog Number:
111-50-10750

Location: Lat. 58°17'45" N.
Long. 134°40'30" W.
(northwest end of Douglas Island)

Description

Peterson Creek (also known as 'Outer Point Creek') drains an area of about 6 square miles on the northwest end of Douglas Island (figure 47.1). The stream enters salt water near Outer Point. The mainstem of Peterson Creek parallels the shoreline of Douglas Island.

At least six tributaries draining the south side of Mt. Meek enter the mainstem in its middle and upper reaches. The numerous tributaries form a dense network of waterways throughout the upper drainage. Peterson ('Outer Point') Creek ranges from 5 to 12 feet wide and from 4 inches to 5 feet deep. The stream gradient is generally low and the stream has many meanders. The tributaries are typically 1 to 4 feet wide and up to 2 feet deep. The water is clear, with a brownish tint.

Fish Species Present

Peterson ('Outer Point') Creek has populations of coho, pink, and chum salmon, cutthroat trout, and Dolly Varden. The stream has not been stocked.

Peterson Creek is a small system with excellent fishery values. The stream is located such that returning adults pass through popular marine sport fishing areas. Outer Point, a favorite fishing location, is located about 200 yards northwest of the creek mouth. Juvenile trapping data for Peterson Creek are presented in table 47.1. Salmon escapement counts are presented in table 47.2.

Fish Habitat

The lower ¼ mile of Peterson ('Outer Point') Creek has gravel substrate and provides both good rearing pools and spawning substrate in the riffle areas.

The middle section of the stream flows through forested meadows. The stream channel here has a primarily muddy substrate, and the water is 3 to 5 feet deep. This section provides good rearing habitat and ripening areas for maturing adult fish. The upper half of the mainstem and the tributaries provide most of the system's spawning habitat. These areas also provide numerous pools for rearing.

Generally, one or both banks of Peterson Creek consist of overhanging vegetation. The middle and upper reaches also contain numerous log jams and instream cover. There are no fish barriers on Peterson Creek.

Public Use

Peterson Creek is accessed by a short trail from the end of north Douglas High-

way. A good trail parallels the upper mainstem of Peterson Creek from about ¼ mile above the mouth. The creek area is in a very close to natural condition and is visited by hikers and hunters. The stream receives some recreational fishing pressure; however, the level of effort and harvest have not been documented.

Land Ownership

The lower ¼ mile of Peterson ('Outer Point') Creek is on private property. The remainder of the drainage is on U.S. Forest Service, City and Borough of Juneau, and Goldbelt Native Corporation lands.

Land Uses

The lower ¼ mile of the creek has been impacted by construction of several private bridges. The impacts to the stream in this area have been minimal.

Upstream from the private property, the creek is in a virtually natural condition. High public use of the trail that parallels the stream does not adversely affect the stream's habitat values.

Peterson Creek, and several of its tributaries, are vulnerable to significant detrimental impacts by future extension of the North Douglas Highway or development of private property.

Two water-use permits are currently on file for Peterson ('Outer Point') Creek.

Conclusion

Peterson ('Outer Point') Creek is a small stream with excellent fishery values; it has not been subjected to significant detrimental impacts from development.

Table 47.1. Juvenile trap catches from Peterson ('Outer Point') Creek.

DATE	LOCATION	NO. TRAPS	SILVER SALMON	CUTTHROAT TROUT	DOLLY VARDEN
04/08/86	Lower mainstem	9	14	1	32
04/10/86	Upper mainstem	16	199	24	78
04/15/86	Tributary #1	10	89	7	33
04/17/86	Tributary #2	4	13	5	21
04/18/86	Tributary #3	6	29	8	13
04/22/86	Tributary #4	3	5	5	3

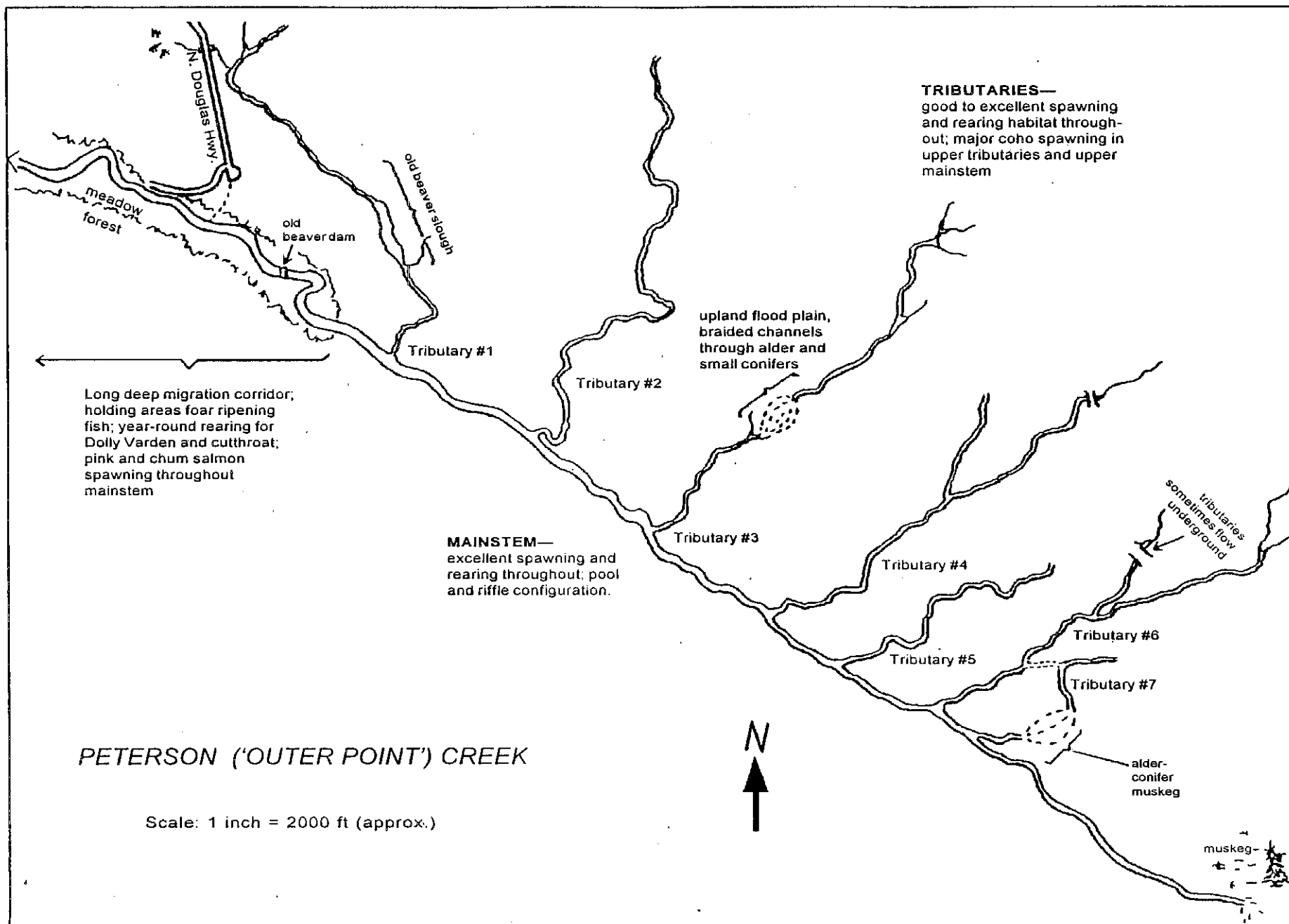


Figure 47.1 Peterson ('Outer Point') Creek.

as have many small streams in the Juneau area. Future development of private property in the watershed and extension of North Douglas Highway pose major threats to the stream's excellent habitat values.

Recommendations

Peterson ('Outer Point') Creek should be designated a top priority fish stream, and the watershed should be given maximum protection to maintain its fishery values. Excellent fish habitat is found throughout this stream. Thus, it will be necessary to critically review land use permit applications and conduct on-site surveys to provide stipulations to protect the habitat values.

Realizing that property owners on the south side of Douglas Island will want to access their property and that the logical route would be through the Peterson Creek drainage, plans should be made to locate the road extension near the beach. This would require only one crossing of the creek, rather than four to six crossings through the middle of the drainage. ■

Table 47.2. Salmon escapement counts for Peterson ('Outer Point') Creek. Dates (month and day) of counts are shown in parentheses.

YEAR	PINK	CHUM	COHO
1954	...	50 (07/20)	...
1963	115 (08/30)	285 (08/30)	...
1968	800 (08/27)	...	0
1969	200 (08/04)	...	0
1970	1,500 (08/13)	...	0
1973	500 (07/17)	100 (07/17)	0
1975	450 (08/11)	0	0
1976	0	0	0
1977	5,000 (08/02)	0	0
1978	0	100 (08/01)	15 (10/27)
1981	1,000 (07/28)	0	183 (10/29)
1982	700 (08/15)	10 (07/27)	2 (10/21)
1983	3,000 (08/2)	1 (08/25)	95 (10/17)
1984	200 (07/24)	0	50 (10/17)
1985	3,000 (10/17)	...	144 (10/07)
1986	...	...	44 (10/14)
1987	2,002 (08/06)	5 (08/06)	27 (10/09)
1988	0 (07/14)	...	0 (10/27)
1989	441 (08/15)	7,500 (07/19)	...
1990	2,260 (08/29)	9 (08/29)	...
1991	250 (08/14)	...	...
1992	2,000 (08/19)	...	...
1993	300 (07/27)	...	...

Chapter 48

Peterson Lake

Anadromous Stream Catalog Number: None

Location: Lat. 58°26'45" N.
Long. 134°44'00" W.
(17 mile Glacier Highway)

Description

Peterson Lake (figure 48.1, opposite page)—located in the headwaters of the Peterson Creek drainage about 17 miles north of Juneau—covers approximately 53 acres and consists of two basins: the north basin, 75 feet deep, and the south basin, 36 feet deep. The two basins are separated by a shallow productive area which is covered with aquatic vegeta-

tion. Peterson Creek (see figure 46.1, page 91) is the lake's largest inlet and enters near the middle of the lake on the east shore. The lake also has six smaller inlets. The lake water is clear, with a brownish tint.

Fish Species Present

Peterson Lake has populations of Dolly Varden and steelhead/rainbow

trout. The lake was rehabilitated in 1961 in an attempt to replace the stunted Dolly Varden population with a rainbow/steelhead trout population.

The lake was stocked with steelhead annually from 1961 through 1968. A complete historical stocking record from 1919 for Peterson Lake is presented in table 48.1.

Fish Habitat

Spawning and rearing habitat is found in the lake's inlets and outlet. Brushy shorelines along the perimeter of the lake provide good overhead cover. There are several fish barriers to upstream migration on the outlet of Peterson Lake. The first series of barriers is approximately ½ mile below the lake, and the lower is about 2 miles below the lake.

The outlet of Peterson Lake has a gravel-boulder substrate and a moderate gradient. This area provides excellent rearing for small rainbow trout.

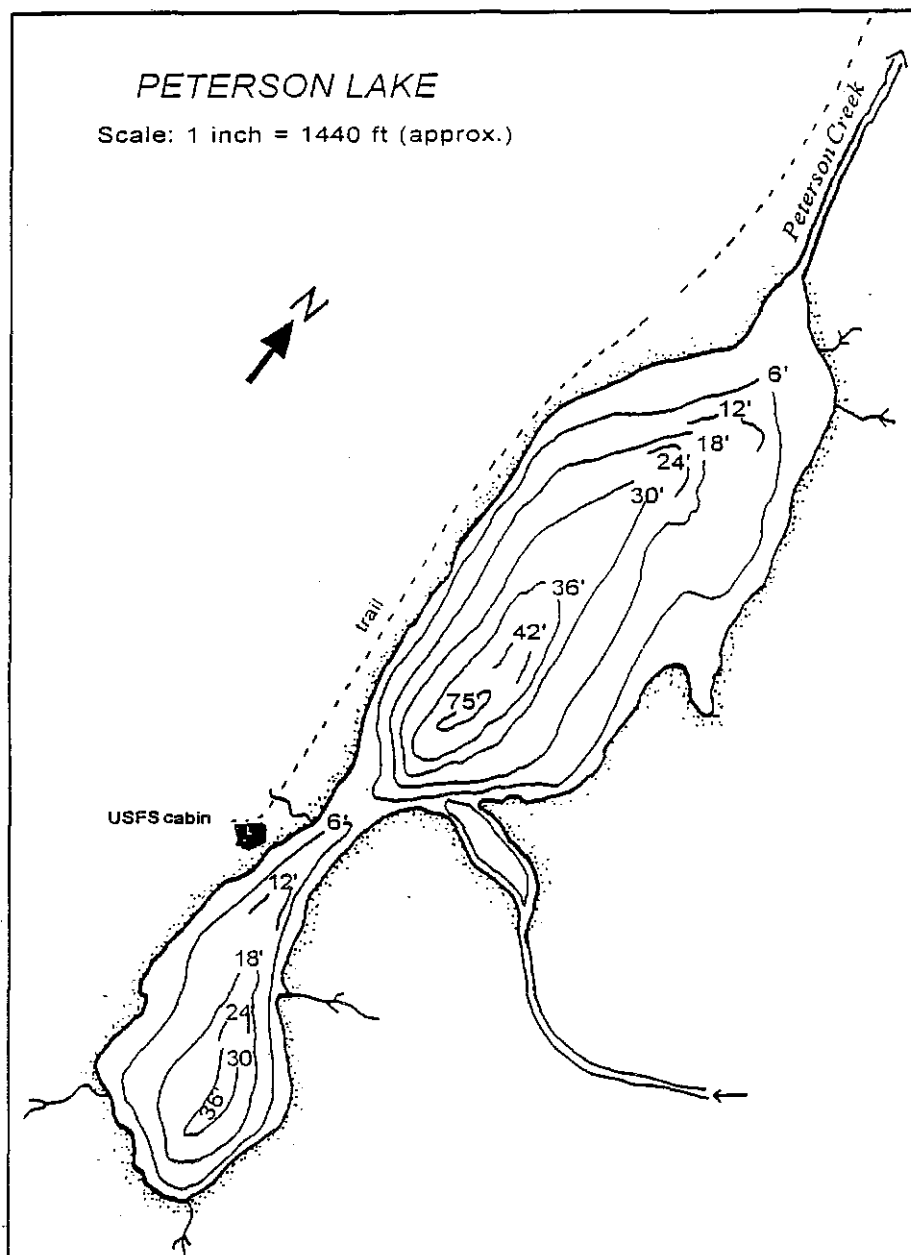


Figure 48.1 Peterson Lake.

Table 48.1. Complete stocking record for Peterson Lake.

DATE	SPECIES*	NUMBER	SIZE/LB.	BROOD SOURCE	HATCHERY
1919	PS	3,300,000	eggs	...	...
06/17/41	SH	8,600	eyed eggs	Ward Lake	...
06/27/41	SH	10,000	eyed eggs	Ward Lake	...
1960	GR	?	...	...	...
08/10/61	SH	14,300	...	remote SE lake	Auke Creek
08/12/61	SH	4,615	...	...	...
08/08/62	SH	16,500	1,100/lb	?	Auke Creek
07/30/63	SH	21,028	1,865/lb	...	Deer Mountain
08/07/64	SH	17,388	700/lb	Pleasant Bay	Deer Mountain
08/00/65	SH	17,000	1,200/lb	...	Auke Creek
08/00/66	SH	17,000	700/lb	...	Auke Creek
08/00/67	SH	12,000	800/lb	...	Auke Creek
1968	SH	15,000	...	...	...

* PS = pink salmon

SH = steelhead

GR = grayling

Public Use

Peterson Lake has received public use for many years, but its use has probably been somewhat limited by the 4-mile hike required to reach the lake from Glacier Highway. In recent years, the area has received increased public use because of a new USFS cabin constructed at the lake.

The trailhead was originally located on private property, and some public use was discouraged by trespass problems. Public use of the area increased in 1983, when the trailhead was moved from private property to adjoining CBJ property, with D-J funds from Sport Fish Division's Access Program.

In 1985, the USFS and Taku Conservation Society constructed the new public cabin at Peterson Lake.

Land Ownership

Peterson Lake is in the Tongass National Forest.

Land Use

Peterson Lake appears to be in a natural condition and free of impacts from detrimental land uses. An old mine is located on Peterson Creek about 1/2 mile above Peterson Lake. It is reported that the mining operations had some detrimental impacts on the lake, but such impacts have not been documented.

Peterson Lake is in a U.S. Forest Service LUD III classification, which normally allows for timber harvest. However, the Peterson Lake area is not to be included in the timber yield calculations.

Conclusion

Peterson Lake is a small but productive fish system which provides needed recreational opportunity to Juneau residents.

Recommendations

Fish habitat values, recreational opportunities, and visual qualities of Peterson Lake should be maintained. This area should receive the highest level of protection to ensure that its attributes are maintained for future generations. ■

Chapter 49

Picnic Creek (unofficial name)

Anadromous Stream Catalog Number:
111-50-10310

Location: Lat. 58°23'35" N.
Long. 134°45'0" W.
(easternmost stream at head of Lena Cove)

Description

Picnic Creek runs for about 1 mile on the south side of Auke Mountain, drains an area of approximately 250 acres and enters salt water in Lena Cove, 13 miles north of Juneau (figure 49.1). The stream is at least in part spring-fed. It ranges from 2 to 4 feet in width and up to 24 inches in depth. The stream gradient is low, and the water is clear, with a brownish tint. The stream branches into three tributaries that are crossed by Glacier Highway.

Fish Species Present

Picnic Creek has populations of coho, pink, and chum salmon, Dolly Varden, and cutthroat trout. Neighborhood residents reported runs of up to 30 coho and 300 pink salmon annually until the late 1960's when a culvert was improperly placed at the stream mouth, which nearly prevented fish access to the stream. The runs of fish were maintained by the local residents, who moved spawners trapped below the culvert to upstream areas. Division of Sport Fish staff moved 25 pink salmon in 1984 and 20 in 1985 from below the culvert to upstream areas. In May 1985, 13 juvenile fish traps set in the stream caught 4 Dolly Varden and 11 cutthroat trout.

In October 1985, a wooden fish pass was constructed at the outlet of the culvert by ADF&G and USFS personnel, to improve passage for all species of fish. This wooden fish pass was reconstructed out of concrete by the

USFS in 1992. At that time a small number of coho fry were stocked into the stream to speed up re-establishment of the run.

Fish Habitat

Excellent spawning and rearing areas are found throughout this small drainage. Heavy streamside vegetation and overhanging banks provide good overhead cover. Being spring-fed, the stream has good water flow all winter long, which should maximize the overwinter survival and rearing conditions. The mouth of the stream faces north and is exposed to heavy surf, which often deposits a gravel berm across the stream mouth. These berms normally exist for a period of time and are subsequently washed out by the stream. Water does flow through the porous gravel berms, but they act as barriers to fish passage when they are present.

Public Use

Upstream sections of Picnic Creek receive little public use. It enters Lena Cove in the USFS Lena Beach Picnic Area. Thus, the stream sides and beach area at the stream mouth receive heavy public use. There is sport fishing activity in salt water at the stream mouth.

Land Use

The mouth and upper reaches of Picnic Creek are on USFS property. The middle section flows through private property and City and Borough of Juneau property.

This small stream has been impacted by road crossings in five locations. Culverts under Glacier Highway on two of the upper branches may be barriers at certain water levels. The stream has essentially recovered from the impacts of culvert placement under Lena Loop Road. The culvert at the stream mouth had major impacts on upstream migration, as fish could only negotiate the culvert during extremely high tides when the stream was also at high flow.

There is at least one private water withdrawal system upstream from Glacier Highway.

Conclusion

This small stream has excellent potential for producing fish, especially since construction of the concrete fish pass, which provides passage for all species of fish. It is anticipated that fish stocks in Picnic Creek should rebound with construction of the pass. These fish could provide good angling opportunities along the marine shorelines of Lena Cove.

Recommendations

Excellent fish habitat values are found throughout this system. Thus, it will be necessary to critically review land use permit applications and to conduct on-site surveys to provide stipulations to protect fishery values.

Conditions at the stream mouth should be monitored to ensure that gravel berms are not present during the spring outmigration and fall immigration periods.

Salmon escapement surveys should be conducted to determine the effectiveness of the fish pass.

The feasibility of using Picnic Creek as an imprint site for hatchery-reared salmon smolt should be determined. The upper part of the fish pass would be a good place to tap water for piping to a net pen anchored off the stream mouth. ■

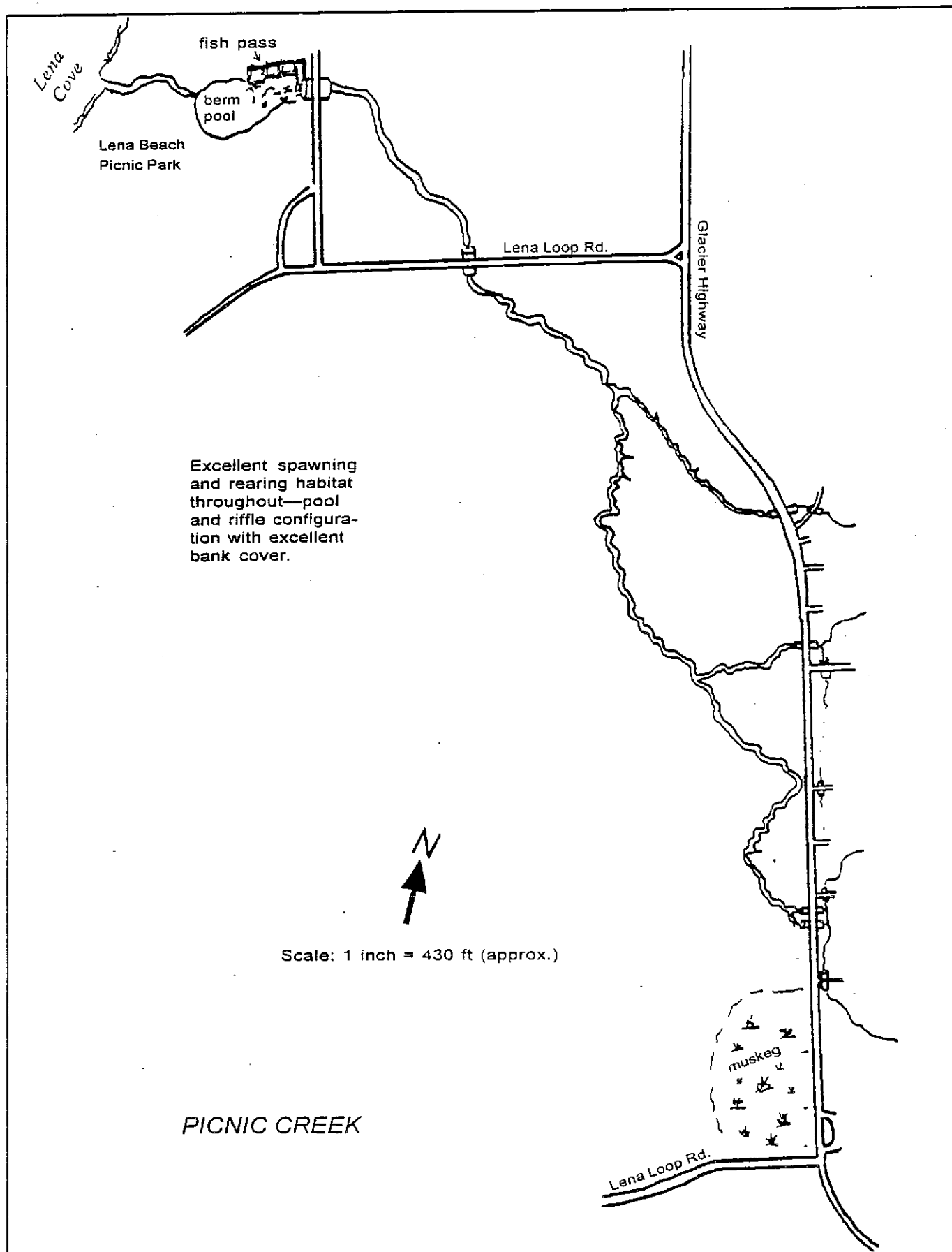


Figure 49.1 Picnic Creek.

Chapter 50

Riverside Drive Pond

Anadromous Stream Catalog Number: None

Location: Lat. 58 20' 0" N.

Long. 134 35' 10" W.

(east of Riverside Dr. between Parkwood
and Steven Richards Memorial Drive)

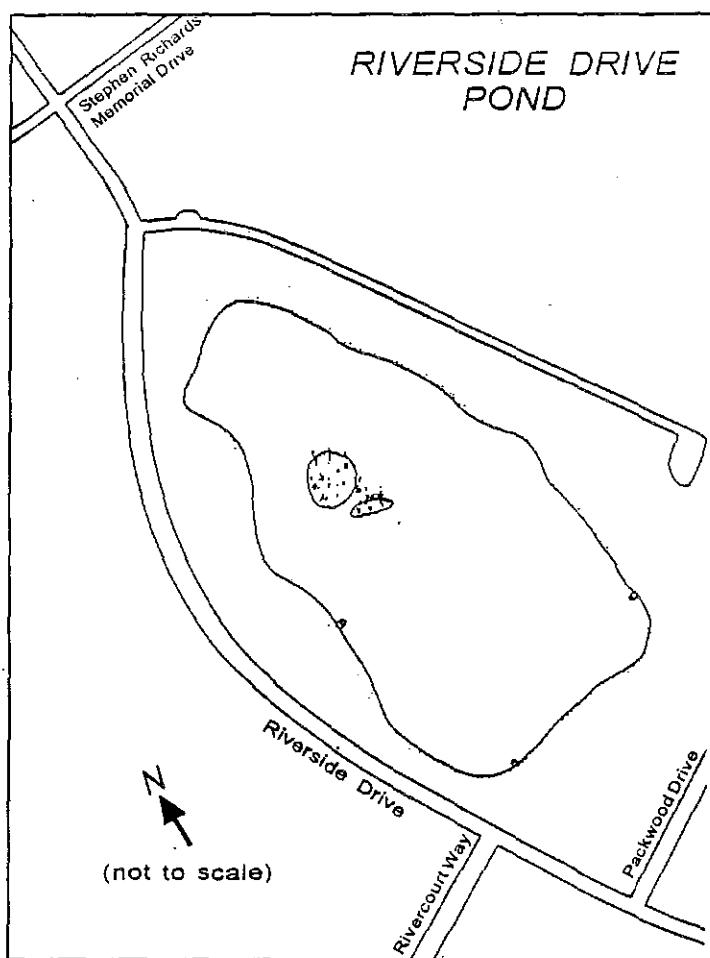


Figure 50.1 Riverside Drive Pond.

Description

This small (about 3-acre) pond alongside Riverside Drive (figure 50.1) was excavated to provide gravel for the surrounding subdivision development. Riverside Drive Pond has a fairly uniform depth of 4 to 6 feet, with a maximum depth of 10 feet.

At least two culverts draining the surrounding area flow into the pond, and one culvert provides drainage from the pond under

Riverside Drive. The high iron content of the water gives it an orange color.

Fish Species Present

Coho salmon are known to be present in Riverside Drive Pond. As of June 25, 1982, three rearing coho salmon were minnow-trapped. It is suspected that these fish entered Riverside Drive Pond from the Mendenhall River via the drainage ditches connecting the two. It is unknown how much dissolved oxygen the shallow pond contains, or how well fish survive during winter.

Public Use

Property adjacent to Riverside Drive Pond has been developed into a park with hiking trails, lawn and play equipment which receives a high level of use in the summer.

Riverside Drive Pond receives some use in the winter by ice skaters. The pond is not known to support any fishing pressure.

Land Ownership

Riverside Drive Pond is located on City and Borough of Juneau property.

Land Uses

The pond was developed through the extraction of gravel in the early 1970's. Residential development in the adjacent area is complete, and the pond and its surrounding area have been developed into a neighborhood park. Surface drainage into the pond would probably pose the greatest threat to habitat values.

This small pond, located in a major residential area, presently has mini-mal fishery values; however, it could potentially produce some local neighborhood angling opportunities if it were stocked with fish.

Recommendations

The feasibility of developing a small fishery, through the release of hatchery-reared 'catchable' size fish should be determined. The feasibility of any fishery development would depend on the water quality of the pond, devising a method to contain the fish in the pond, and the availability of fish.

The feasibility of using a flocculent to settle out suspended iron sediment should also be examined. Clear water would add significantly to the aesthetic quality and productivity of the pond. ■

Chapter 51

Salmon Creek

Anadromous Stream Catalog Number:
111-40-10150

Location: Lat. 58°19'50" N.
Long. 134°28'22" W.
(4 mile Egan Drive)

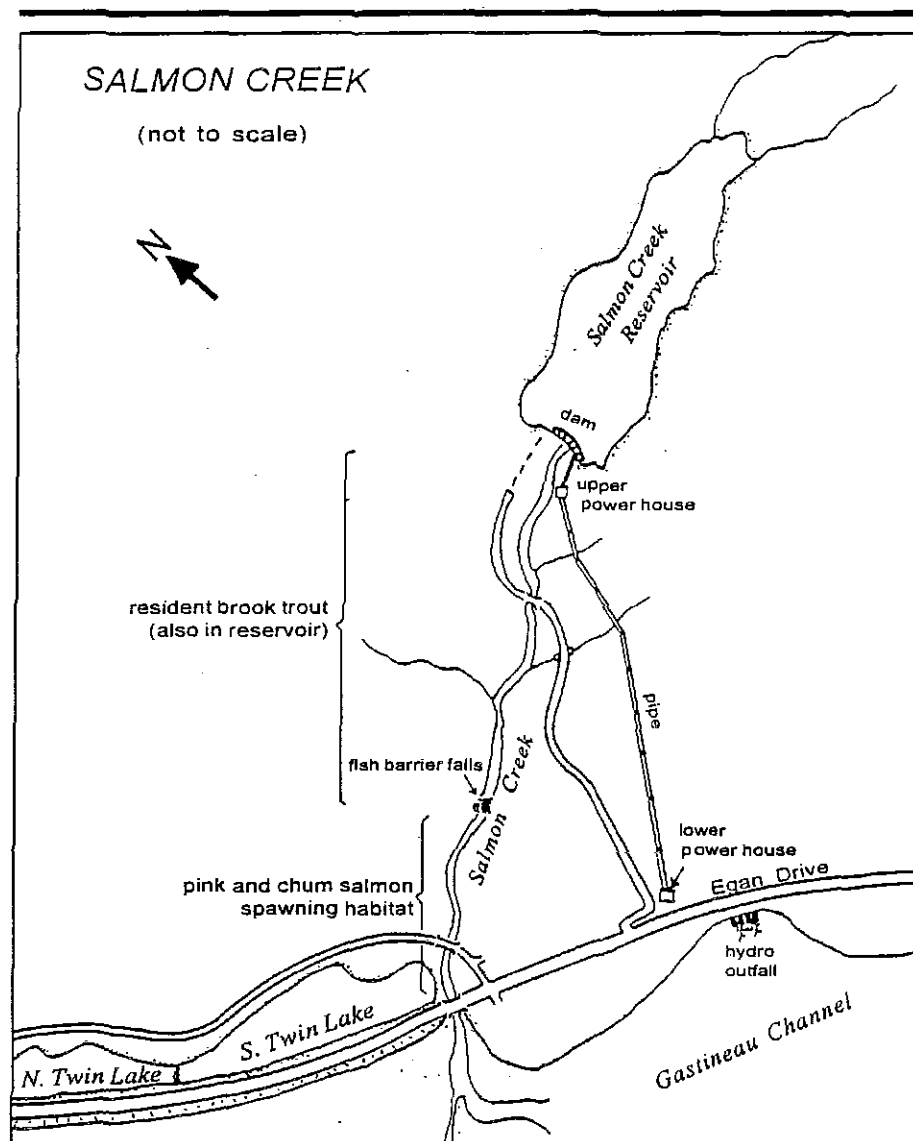


Figure 51.1 Salmon Creek.

Description

Salmon Creek originates on the northeast side of Mount Juneau and drains an area of about 9 square miles. After feeding Salmon Creek reservoir (a hydro-

electric facility), the stream flows about 3 miles to salt water in Gastineau Channel (figure 51.1). A falls about 1/8 mile above tidewater forms a total barrier to upstream fish migration. Above the barrier falls, Salmon Creek ranges from 6 to 20

feet wide, with a fairly high gradient. The streambed in this area is primarily large gravel and bedrock substrate. Stream gradient decreases downstream from the falls, and the stream averages 30 feet wide and 1½ feet deep. The water color in Salmon Creek is clear.

Fish Species Present

Salmon Creek has populations of coho, pink, and chum salmon, Dolly Varden, and eastern brook trout. Rearing and spawning populations have been documented many times (table 51.1), and Salmon Creek has an extensive history of stocking (tables 51.2 and 51.3).

Two juvenile fish traps set below the falls July 2, 1970 captured 15 Dolly Varden and 2 coho salmon. One trap fished on August 29, 1981 caught 3 Dolly Varden and 2 coho salmon.

The Salmon Creek Hatchery was operated by the Northern Southeast Regional Aquaculture Association until June 1984. A hatchery building using Salmon Creek water was located alongside the stream, and rearing species of fish were reared in net pens in South Twin Lake, near the stream mouth. The hatchery operation was not economically viable and consequently ceased operation.

Gastineau Hatchery, which operates on Salmon Creek water, is responsible for a portion of the adult salmon that spawn in Salmon Creek.

Fish Habitat

Salmon Creek provides excellent spawning habitat downstream from the barrier falls to the intertidal areas. This section of stream has good overhead vegetative cover, yet lacks the pools and slow water areas needed for rearing. Upstream from the falls, Salmon Creek has numerous bedrock pools with boulders and streamside vegetation for cover. Good sections of spawning gravel are found in pockets throughout the stream above the falls.

Public Use

Salmon Creek has long been a favorite area for sport fishing, especially

Table 51.1. Salmon escapement counts in Salmon Creek.

YEAR	PINK	CHUM	COHO
1960	600 (09/01)	...	0
1961	0	...	0
1962	99 (08/17)	...	0
1963	0	...	0
1964	365 (09/04)	...	0
1965	200 (08/18)	...	0
1967	20 (08/11)	...	0
1968	1,900 (08/14)	...	0
1969	347 (08/28)	...	0
1971	108 (08/27)	70 (08/27)	0
1972	211 (09/08)	170 (08/01)	0
1973	437 (08/08)	172 (08/08)	0
1974	150 (08/14)	20 (08/14)	0
1975	285 (08/21)	105 (08/21)	0
1976	50 (08/03)	168 (08/03)	25 (10/27)
1977	2,300 (08/10)	475 (08/03)	0
1978	472 (08/17)	74 (08/03)	0
1979	3,760 (08/21)	61 (07/23)	0
1980	496 (08/21)	36 (07/23)	0
1981	5,275 (08/14)	365 (weir)	12 (10/23)
1982	550 (08/16)	45 (08/02)	5 (10/28)
1983	4,856 (weir)	297 (weir)	2 (10/15)
1984	1,050 (08/27)	576 (07/24)	3 (09/10)
1985	20,739 (08/21)	2,220 (08/07)	*2,600 (10/25)
1986	...	2,189 (08/02)	...
1987	26,681 (08/15)	14,729 (08/05)	0 (10/14)
1988	1 (07/14)	4,940 (08/03)	8 (11/04)
1989	22,230 (08/15)	3,922 (07/24)	...
1990	9,500 (09/07)	1,104 (07/25)	...
1991	1,462 (08/09)	2,205 (08/09)	904 (10/05)
1992	7,250 (08/27)	3,045 (08/10)	...
1993	1,674 (08/31)	2,165 (08/18)	...
1994	33,055 (09/09)	6,740 (08/08)	...

* Salmon Creek Hatchery fish. Hatchery strays in 1985 were from Salmon Creek Hatchery and in 1991 from Gastineau Hatchery.

Table 51.2. Stocking record for Salmon Creek.

DATE	SPECIES	NUMBER	SIZE	SOURCE
1919	pink salmon	200,000	fry	...
09/09/31	eastern brook	9,300	fry	McDonald Lake, AK
1960	rainbow trout	2,000	...	...
1961	rainbow trout	1,000	...	...
1963	rainbow trout	1,000	...	...
1964	rainbow trout	1,000	...	...
1967	rainbow trout	2,000	...	...
1968	rainbow trout	2,500	...	...
05/30/75	coho salmon	15,393	smolt	Crystal Lake, AK
05/21/76	coho salmon	21,500	18/lb	Crystal Lake, AK
1986	coho salmon	20,422	smolt	Snettisham
1987	coho salmon	101,444	smolt	Snettisham

downstream from the falls. This area became even more popular once salmon began returning from enhancement efforts. Recreational angling effort and harvest data for Salmon Creek are presented in table 51.4.

Land Ownership

The lower section of Salmon Creek is bounded by private property. The upper section has been selected by the City and Borough of Juneau. The upper Salmon Creek power house and dam are on property administered by the Federal Power Authority.

Land Uses

Salmon Creek, downstream from Old Glacier Highway, was used as a source of gravel for local construction in the early 1970's. This section of the stream was significantly impacted by the removal of prime spawning gravel.

Lower Salmon Creek has essentially recovered from the impacts of bridge construction on Old Glacier Highway and Egan Drive.

The major impacts to Salmon Creek's fishery values are caused by the local power company's use of water. The power company has had water rights on the stream since historical days. Water

Table 51.3. Releases of salmon (by species and year) from Salmon Cr. Hatchery into Salmon Creek.

YEAR	SPECIES	NUMBER	SIZE
1981	pink	500,000	fry
	chum	1,255,000	fry
1982	pink	1,577,000	fry
	chum	1,011,000	fry
1983	pink	881,000	fry
	chum	2,683,000	fry
	coho	163,839	smolt
1984	pink	4,811,849	fry
	chum	3,350,846	fry
	coho	449,656	fry
	coho	476,241	smolt

Table 51.4. Recreational angling effort and harvest data for Salmon Creek.

YEAR	TIME PERIOD	ANGLER HOURS	COHO	PINK	CHUM	DOLLY VARDEN
1984	07/27-10/28	4,963	2,099	1,420	741	308
1985	07/08-10/27	3,827	591	1,695	304	16
1986	07/27-09/29	4,477	600	1,387	1,481	...
1987	06/22-08/09	600	0	227	136	181
1988	09/12-10/23	115	0	0	0	...
1989	08/28-11/05	74	0	1,332	0	...
1990	06/18-11/04	2,664	0	2,619	154	243

flow in the stream fluctuates greatly, depending on whether water is being retained or released at Salmon Creek Reservoir. During dry periods, and when water is being released, water flows capable of scouring the channel are common.

Water withdrawn for power generation at Lower Salmon Creek Power House does not go back into Salmon Creek, but provides water for Douglas Island Pink and Chum Salmon Inc. fish hatchery on Gastineau Channel.

Conclusion

Salmon Creek's fishery values have been subjected to significant impacts from gravel removal and water use, but the stream still has good potential for natural production of pink and chum salmon. The stream mouth is very accessible, and it can be expected to provide significant angling opportunities.

Recommendations

The existing habitat values of Salmon Creek should be maintained. A water use program should be coordinated with the power company to maintain a minimum flow of water in the stream. ■

Chapter 52

Salmon Creek Reservoir

Anadromous Stream Catalog Number:
None

Location: Lat. 58°20'30" N.
Long. 134°24'20" W.
(2.7 miles north of Juneau)

Description

Salmon Creek Reservoir (figure 52.1) is a manmade lake (1,188-foot elevation) located about 3 miles upstream from the mouth of Salmon Creek (see figure 51.1, following page). The lake is deep, with steep sides, and the water is normally clear to slightly glacial green. The reservoir is about 1 mile long and has a storage capacity of 19,000 acre feet when full (*Armstrong and Reed, 1980*):

Salmon Creek Dam is a constant angle, concrete arch structure that is 170 feet high and 648 feet across, including the spillway. The dam was built in 1915 by the Alaska Gastineau Mining Company to provide hydroelectric power for Juneau. It is now operated by Alaska Electric Light and Power Company (AEL&P).

Since 1960, the Federal Energy Regulatory Commission required that

the lake level be kept at least 40 feet below the spillway so that the dam will withstand an earthquake of 8.0 on the Richter scale.

The lake level fluctuates as much as 100 feet with the demand for electrical power. It is usually at its lowest in May, nearly full by September, and at its highest level by early winter.

Salmon Creek Reservoir is fed by two main inlets at the east end of the lake and by several small, steep creeks along the north and south shores. The outlet is channeled through a pipe to the upper power house.

The release valve and spillway are also possible sources of water for Salmon Creek.

Fish Species Present

Eastern brook trout were planted in Salmon Creek Reservoir in 1917 and 1927. The 1927 plant of 13,150 brook trout was very successful and has been supporting itself with natural reproduction since that time (*Wadman, 1962*).

In 1976, research was done to establish the growth rates of these fish and to make a population estimate. This was done in conjunction with the lowering of the daily bag limit from 20 to 10 fish (and subsequent public pressure to increase the daily bag limit back to 20 fish).

A Schumacher mark-recapture program estimated a population of 1,250 catchable eastern brook trout (with an average condition factor of 1.06).

Fish Habitat

The two main inlets to Salmon Creek Reservoir provide limited spawning potential in their delta areas. Eastern brook trout do beach spawn in some areas; however, the success of all spawning is jeopardized by the large fluctuations in water level. Water level fluctuations are such that the lake is fairly high during spawning in September and October and very low during the spring (when emergence takes place).

Salmon Creek Reservoir has a limited rearing capability, primarily because of its fluctuating water level. Its shorelines lack cover, except at the reservoir's 'full' level.

The two inlet streams are short and very fast-flowing and provide little rearing habitat.

Public Use

Salmon Creek Reservoir is accessed via a road from the lower Salmon Power House at Mile 3, Egan Drive. The road was constructed by the power company in 1983 and is open to public foot traffic. A good trail leads from the end of the road at the upper Salmon Creek power house to the reservoir. Some anglers access the reservoir by float plane.

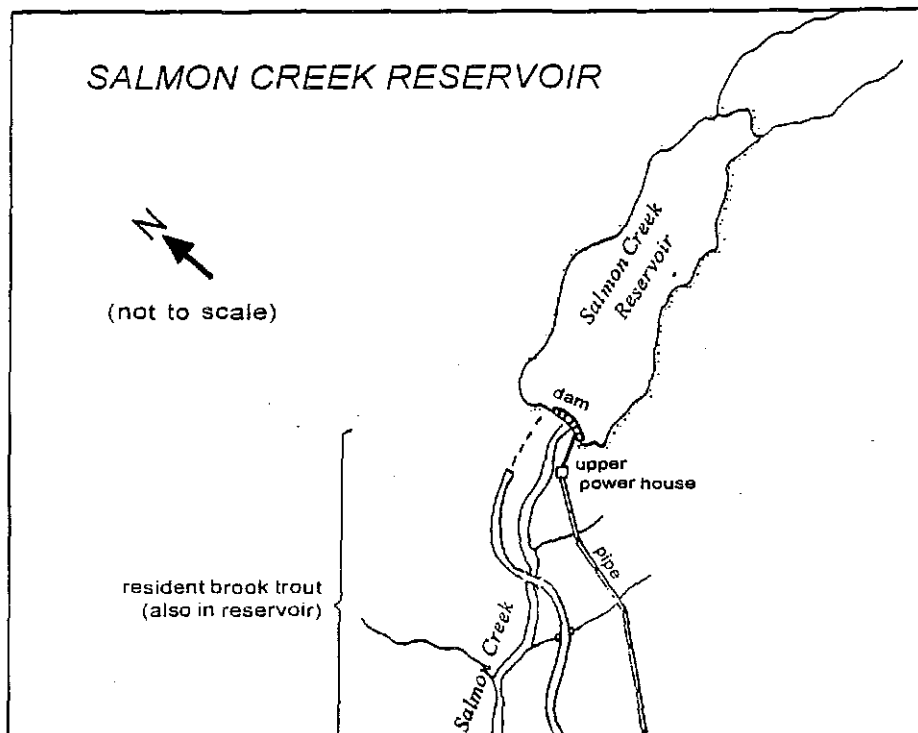


Figure 52.1 Salmon Creek Reservoir.

The reservoir is reported to have provided excellent fishing for large eastern brook trout in the 1930's. Since that time, their average size has become smaller, with most of the fish in the 9- to 10-inch range.

Salmon Creek Reservoir receives moderately heavy fishing pressure during the summer months and in the winter ice fishing (Armstrong and Reed, 1970).

Land Ownership

Salmon Creek Reservoir is located on property which is administered by the Federal Power Authority.

Land Uses

The primary use of Salmon Creek Reservoir is the storage and use of water for generating electricity. The brook trout fishery that has developed at the

reservoir is not a priority of the reservoir; however, it certainly benefits local anglers. The fluctuating water level in the reservoir is likely a major factor in fish production.

Conclusion

Salmon Creek Reservoir provides the only eastern brook trout fishery in the immediate Juneau area. Fluctuating water levels in the reservoir have a major impact, both on angler use and fish production. Public access to the reservoir is provided by the Alaska Electric Light and Power Company.

Recommendations

The fishery values of Salmon Creek Reservoir should be maintained or even improved, through working with AEL&P to modify its water levels schedules to promote fish production in the reservoir. ■

Chapter 53

Sheep Creek

Anadromous Stream Catalog Number:
111-40-10280

Location: Lat. 58°15'40" N.
Long. 134°19'24" W.
(2.7 mile Thane Road)

A private non-profit salmon hatchery, operated by Douglas Island Pink and Chum, Inc. (DIPAC), is located on Sheep Creek near the base of the falls.

Fish Species Present

Below the falls, Sheep Creek has populations of pink and chum salmon and Dolly Varden. Above the falls, Sheep Creek has a population of resident Dolly Varden. Eastern brook trout were stocked above the falls in 1931 (2,100 fry) and in 1953 (2,000 fry); however, the stocking is believed to have been unsuccessful.

The mouth of Sheep Creek (and just to the west from the mouth) has been used as a release site for king and coho salmon smolts produced both at the State of Alaska Snettisham hatchery and the DIPAC Sheep Creek hatchery.

A record of salmon spawning escapements for Sheep Creek is presented in table 53.1 below. A stocking record

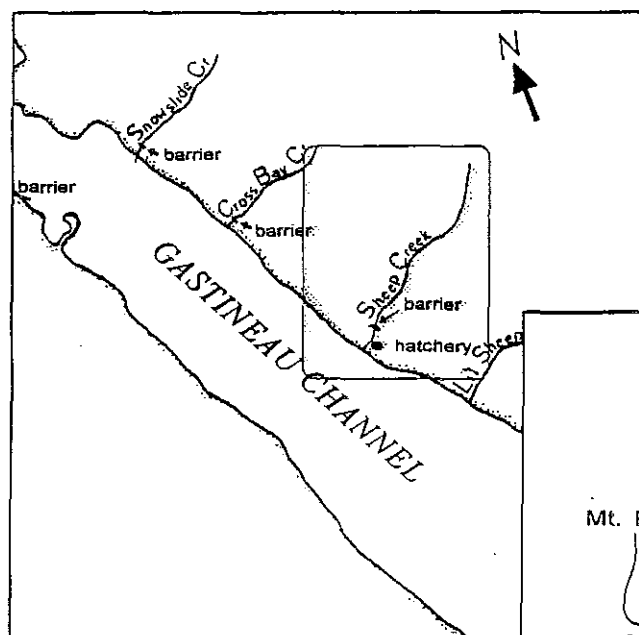


Figure 53.1
Gastineau
Channel and
Sheep Creek
area.

Description

Sheep Creek originates in a glacier at the head of Sheep Creek Valley. The stream flows in a westerly direction for approximately 3 miles and drains an area of 3.7 miles south of Juneau (figures 53.1 and 53.2).

Sheep Creek ranges from 4 to 15 feet wide in the upper valley. Downstream from a barrier falls approximately 200 yards from the stream's mouth, the creek averages 30 feet wide and 1½ feet deep. Stream gradient is moderate throughout its length except for a few areas with heavy rapids and the barrier falls. The water is generally clear, with a slight glacial coloration in the summer.

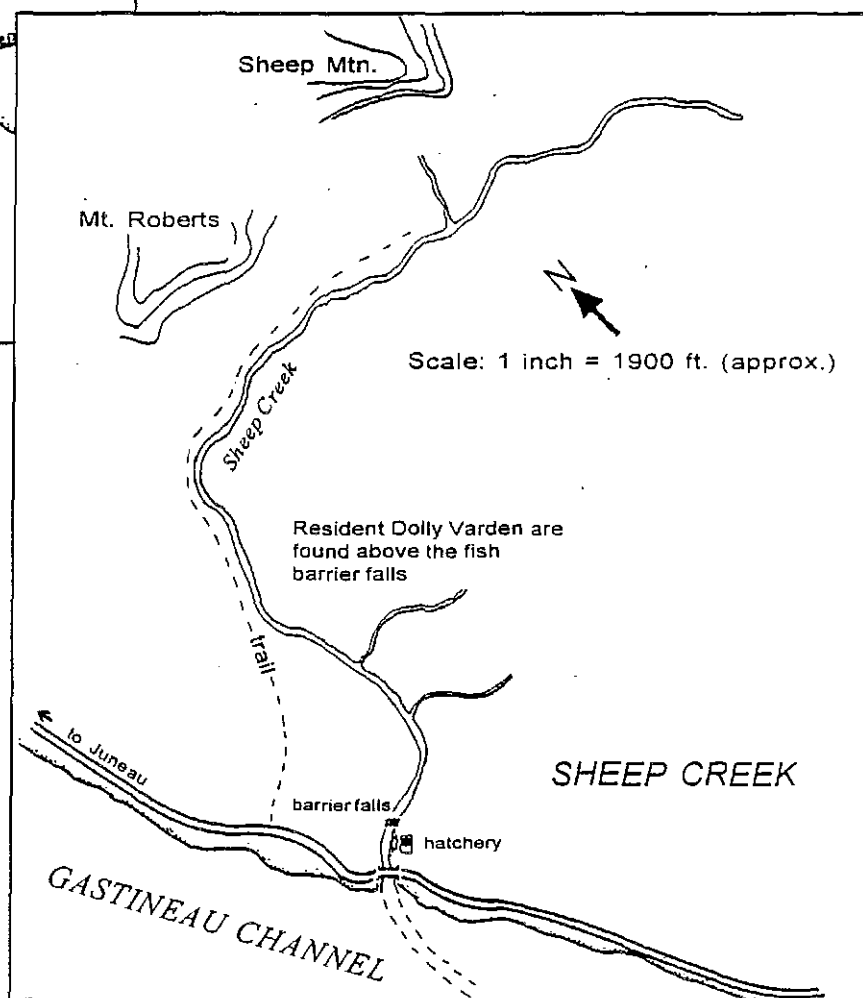


Figure 53.2 Sheep Creek.

Table 53.1. Sheep Creek salmon spawning escapements, 1960-1994.

YEAR	PINK	CHUM
1960	330 (09/01)	...
1961	50 (08/17)	...
1962	3 (08/17)	...
1963	240 (09/01)	...
1964	36 (09/03)	...
1966	450 (09/08)	...
1967	0	...
1968	840 (08/14)	...
1969	692 (08/26)	...
1971	280 (08/27)	0
1972	300 (08/01)	27 (08/01)
1973	24 (08/08)	63 (08/08)
1974	178 (08/09)	0
1975	55 (08/28)	5 (08/28)
1976	0	0
1977	280 (08/12)	0
1978	0	2 (08/17)
1979	1,330 (08/12)	30 (08/12)
1980	0	...
1981	800 (08/11)	0
1982	650 (08/16)	36 (08/02)
1983	16,000 (08/17)	1 (08/25)
1984	1,500 (08/13)	60 (07/11)
1985	49,805 (08/21)	1,034 (07/28)
1986	...	...
1987	...	...
1988	10,500 (08/15)	3,500 (08/15)
1989	19,600 (08/15)	6,000 (08/15)
1990	...	6,000 (08/15)
1991	25,000 (08/15)	6,000 (08/15)
1992	2,346 (08/15)	1,003 (08/15)
1993	2,000 (08/15)	4,000 (08/15)
1994	79,000 (08/15)	15,990 (08/15)

of Sheep Creek downstream from the falls is presented in table 53.2. Table 53.3 contains complete data on returns of hatchery salmon to Sheep Creek for the years 1984 to 1991.

Fish Habitat

Upstream from the falls, Sheep Creek has good streamside vegetation and undercut banks which provide good cover for resident fish. The streambed substrate is primarily gravel, which provides an abundance of spawning area.

Low stream flow in winter is probably the greatest limiting factor in this section of the stream. Downstream from the falls, Sheep Creek is primarily a spawn-

Table 53.2. Salmon stocking record for Sheep Creek, downstream from falls.

DATE	SPECIES	NUMBER	SIZE	SOURCE	AGENCY
30 May 75	coho salmon	15,294	smolt	Crystal Lake	ADF&G
21 May 76	coho salmon	20,000	smolt	Crystal Lake	ADF&G
1981	pink salmon	1,041,000	fry	DIPAC	DIPAC
1982	pink salmon	9,000,000	fry	DIPAC	DIPAC
	chum salmon	100,000	fry	DIPAC	DIPAC
1983	pink salmon	1,448,600	fry	DIPAC	DIPAC
	chum salmon	700,000	fry	DIPAC	DIPAC
1984	pink salmon	32,022,579	fry	DIPAC	DIPAC
	chum salmon	933,930	fry	DIPAC	DIPAC
1985	pink salmon	14,931,240	fry	DIPAC	DIPAC
	chum salmon	4,290,968	fry	DIPAC	DIPAC
1986*	pink salmon	1,200,000	fry	DIPAC	DIPAC
	king salmon	30,280	smolt	Snettisham	ADF&G
1987	pink salmon	15,034,000	fry	DIPAC	DIPAC
	chum salmon	10,123,000	fry	DIPAC	DIPAC
	king salmon	31,112	fry	Snettisham	ADF&G
	coho salmon	39,442	smolt	Snettisham	ADF&G
1988	pink salmon	29,775,868	fry	DIPAC	DIPAC
	chum salmon	10,122,835	fry	DIPAC	DIPAC
	king salmon	31,597	smolt	Snettisham	ADF&G
	coho salmon	100,120	smolt	Snettisham	ADF&G
1989	pink salmon	0	fry	DIPAC	DIPAC
	chum salmon	26,697,200	fry	DIPAC	DIPAC
	king salmon	113,786	smolt	Snettisham	ADF&G
	coho salmon	41,760	smolt	Snettisham	ADF&G
1990	pink salmon	17,962,133	fry	DIPAC	DIPAC
	chum salmon	3,073	fry	DIPAC	DIPAC
	king salmon	123,267	smolt	Snettisham	ADF&G
	coho salmon	533,218	smolt	DIPAC	DIPAC
1991	pink salmon	16,258,086	fry	DIPAC	DIPAC
	chum salmon	37,874,036	fry	DIPAC	DIPAC
	king salmon	100,818	smolt	Snettisham	ADF&G
	coho salmon	505,287	smolt	DIPAC	DIPAC
1992	chum salmon	27,011,585	...	...	...
1993	chum salmon	27,002,939	...	...	...
1994	chum salmon	14,635,458	...	...	...

* Since 1989, releases of king and coho salmon from ADF&G were conducted at Sheep Creek through a cooperative agreement with DIPAC.

ing stream with minimal streamside cover. A pool at the base of the falls provides the only rearing area.

Public Use

Sheep Creek downstream from the falls has been a favorite location for Dolly Varden and pink salmon fishing since historical days. In 1960, Sheep Creek accounted for 17.5% of anglers fishing local roadside streams.

Adult pink and chum salmon began returning to the Sheep Creek Hatchery

in 1983. Since 1983, Sheep Creek has provided the most active sport fishery on the Juneau road system. A summary of the recreational angler effort and harvest at Sheep Creek is provided in table 53.4. The area continues to be one of the most popular roadside fisheries in the Juneau area.

Land Ownership

The upper reaches of Sheep Creek are in federal ownership. Private property is located at the stream mouth.

Table 53.3. Summary of returns to Sheep Creek Hatchery, 1984-1991.

YEAR	PINK SALMON		CHUM SALMON		COHO SALMON	
	Harvest	Escapement	Harvest	Escapement	Harvest	Escapement
1984	23,553	5,000	0	0	0	0
1985	268,000	73,500	0	1	0	500
1986	1,139	5,000	0	300	0	0
1987	560,000	85,000	0	2,178	0	0
1988	616	1,818	6,209	8,738	0	15
1989	21,532	6,253	9,263	4,217	0	400
1990	105,250	31,953	30,000	0		100
1991	152,067	25,000	42,891	25,000	0	250

Land Uses

Mining poses the greatest threat to fish habitat and recreational use of Sheep Creek. A proposal to reopen the old A-J Mine according to the preferred alternative would turn Sheep Creek into a toxic tailings disposal site and discharge contaminated treatment water into Gastineau Channel near its mouth. Development of the tailings dam would essentially eliminate fish

and wildlife habitat in the valley and associated public uses. Water near the mouth of Sheep Creek would likely have detrimental impacts on the popular recreational angling and shellfish harvesting area.

Conclusion

Sheep Creek remains in fairly natural condition. Upper Sheep Creek provides the only opportunity in the

Juneau area to fish for landlocked Dolly Varden in a scenic, alpine environment.

A major roadside sport fishery has developed at the mouth of Sheep Creek, and this area also provides the most important personal-use crab fishery in the entire Juneau area.

Sheep Creek, its fishery habitat, and the high level of public use in the Sheep Creek area appear to be extremely vulnerable to impact from reopening the A-J Mine.

Recommendations

Sheep Creek water quality must be maintained for production of wild fish stocks and for use in the hatchery. Arrangements with the hatchery operator should be continued to provide the popular recreational sport fishery based on hatchery stocks.

Reopening the A-J Mine should proceed in such a way as to not affect the habitat values of upper or lower Sheep Creek or the high levels of public use of these areas. ■

Table 53.4. Angler effort and harvest data at Sheep Creek, by species and sampling period, for years 1983, 1985, 1986, and 1987.

YEAR	SAMPLE PERIOD	ROD HOURS	DOLLY VARDEN	CHUM SALMON	PINK SALMON	COHO SALMON	CUTTHROAT TROUT
1983	4/19-10/1	7,528	396	84	12,773	0	0
1984	7/27-8/25	4,292	0	29	5,657	0	0
1985	7/08-9/01	4,480	128	7	6,968	0	0
1986	7/07-9/29	2,163	217	29	2,485	0	0
1987	4/20-9/13	6,442	223	26	10,905	0	0
TOTAL		24,905	964	175	38,788	0	0

Chapter 54

Shrine Creek

Anadromous Stream Catalog Number:
111-50-10140

Location: Lat 58°28'15" N.

Long. 134°47'00" W.

(25 mile Glacier Highway; enters salt water
directly south of Shrine of St. Therese)

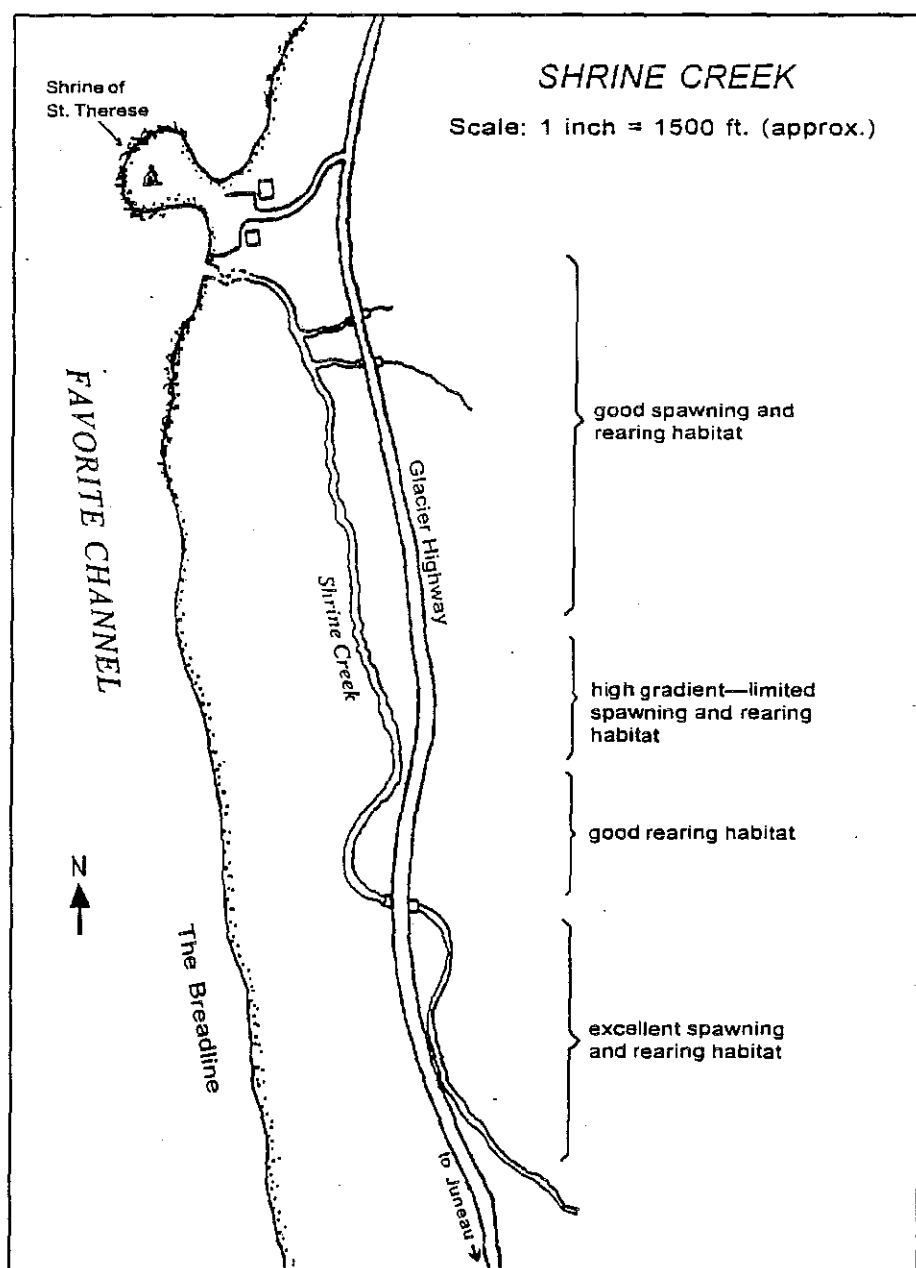


Figure 54.1 Shrine Creek.

Description

Shrine Creek originates in a valley west of Glacier Highway and about 1 mile north of Tee Harbor. It parallels Glacier Highway for about 2 miles, then crosses the highway and flows another 1½ miles before entering Favorite Channel immediately south of the Shrine of St. Therese (figure 54.1).

The upper stream has a higher gradient for 0.4 mile, then flattens out again in the lower reaches. From its mouth to Glacier Highway, the stream ranges from 6 to 10 feet wide and from 1 to 2 feet deep. Above the highway, the stream averages 3 feet wide with pools to 2 feet deep. The water is clear, with a slight brownish tint.

Fish Species Present

Shrine Creek has populations of coho and pink salmon, cutthroat trout, and Dolly Varden. The stream has not been stocked.

Juvenile fish trapping data collected at Shrine Creek are shown in table 54.1.

Escapement surveys were first conducted on this system in 1985: 707 pink salmon were counted in the lower stream on August 23, and an additional 150 were directly observed off the stream mouth.

Table 54.1. Juvenile fish trap data collected from Shrine Creek.

DATE	COHO	DV	CUTTHROAT
7/27/70	44	57	10
7/3,5,8/85	14	61	13
7/3,5,8/85	44	162	27

Fish Habitat

Prime spawning habitat is located above Glacier Highway. Some sections of good habitat are also found downstream from the highway. Streamside cover is typically dense salmonberry and blueberry brush with evergreen cover overhead. The stream has many under-

cut banks. There are no barriers in the lower system, but gravel bars above the highway may impede migration at low water levels. In-migrants may have trouble negotiating the relatively steep stream mouth during low stream flows at low tide levels.

Public Use

Shrine Creek receives no public use, but the beach next to the stream mouth receives some angling pressure.

Land Ownership

The lower reaches of Shrine Creek flow through private property. The rest of the creek is on USFS land.

Land Use

Shrine Creek is in a near natural state. The only impact to fishery habitat is a 5-foot-diameter culvert which is presently located under Glacier Highway.

Conclusion

Shrine Creek is a small, productive stream, still in a nearly natural condition. It has a low gradient, which provides excellent habitat for rearing species.

Recommendations

Excellent fish habitat is found throughout this stream. It will be necessary to critically review land use permit applications and conduct on-site surveys to provide stipulations for protection of its habitat values. ■

Chapter 55

Snowslide Creek

Anadromous Stream Catalog Number: None

**Location: Lat. 58°16'55" N.
Long. 134°22'15" W.
(2 mile Thane Road)**

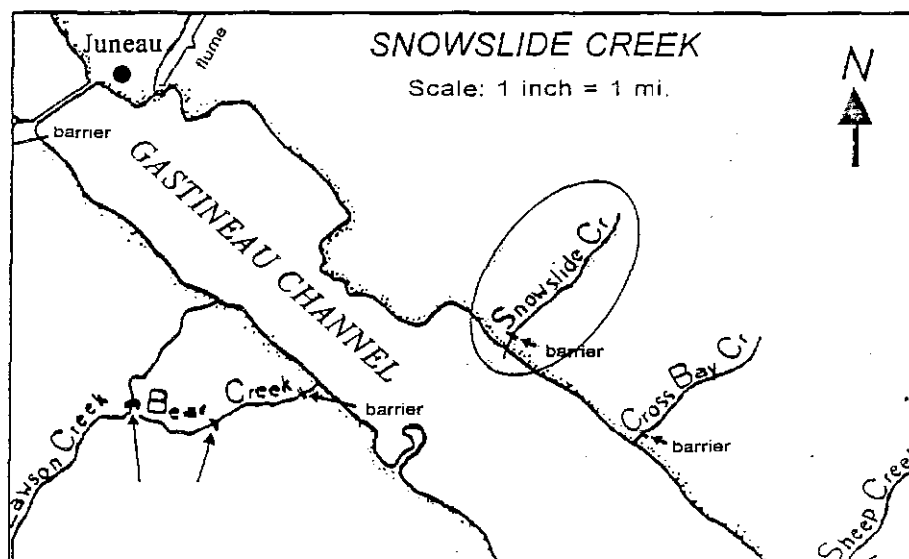


Figure 55.1 Snowslide Creek.

Description

Snowslide Creek is a small, very steep stream that drains the west side of Gastineau Peak (figure 55.1), which flows about 1 mile before entering salt water in Gastineau Channel. The water is clear.

Fish Species Present

Fish have not been documented in this stream.

Fish Habitat

Snowslide Creek has minimal fish habitat values because of its extremely steep gradient and a falls at tidewater. The stream may provide some intertidal spawning habitat.

Land Ownership

Snowslide Creek flows through private property.

Public Use

None.

Land Uses

The stream has been impacted by placement of a culvert under Thane Road and also by excavation to divert snowslides. These land use activities have probably not hurt the fishery values of the system.

Conclusion

Snowslide Creek could provide a source of water for activities such as imprinting fish off the stream mouth, but its instream fish values are minimal.

Recommendations

Water quality in the stream should be maintained because of potential impacts on Gastineau Channel. ■

Chapter 56

Steep Creek

Anadromous Stream Catalog Number:
111-50-10500-2006

Location: Lat. 58°24'56" N.
Long. 134°34'30" W.
(1.3 mile Glacier Spur Road)

Description

Steep Creek drains the northwest side of Heintzelman Ridge. The stream flows approximately 3 miles and empties into Mendenhall Lake (figure 56.1). The lower 500 yards of the stream range from 12 to 20 feet wide and from 1 to 2 feet deep. This section of the stream has two pools—one about ¼ acre and the other about ½ acre. The water

is clear. The gradient in the lower 500 yards is low to moderate.

Fish Species Present

Steep Creek has populations of coho, pink, chum, and sockeye salmon, Dolly Varden, and cutthroat trout.

Four juvenile fish traps set on July 30, 1970 caught 2 rearing Dolly Varden and 2 juvenile coho salmon. Steep

Creek was stocked with sockeye salmon from Kodiak Island in the 1920's; however, it is believed that the stream had a population of sockeye prior to being stocked.

Steep Creek is the largest tributary of Mendenhall Lake, and it is usually the first to thaw in the spring. Most fish rearing in Mendenhall Lake proper probably imprint on Steep Creek, as it provides the major source of fresh water in springtime (when anadromous fish imprint).

Steep Creek has much larger spawning populations of salmon than could be produced by fish rearing in the stream alone. A summary of salmon escapement data for Steep Creek is presented in table 56.1.

Fish Habitat

Steep Creek is the major spawning area in the Mendenhall Lake drainage. Except for its two ponds, which provide excellent holding and maturing

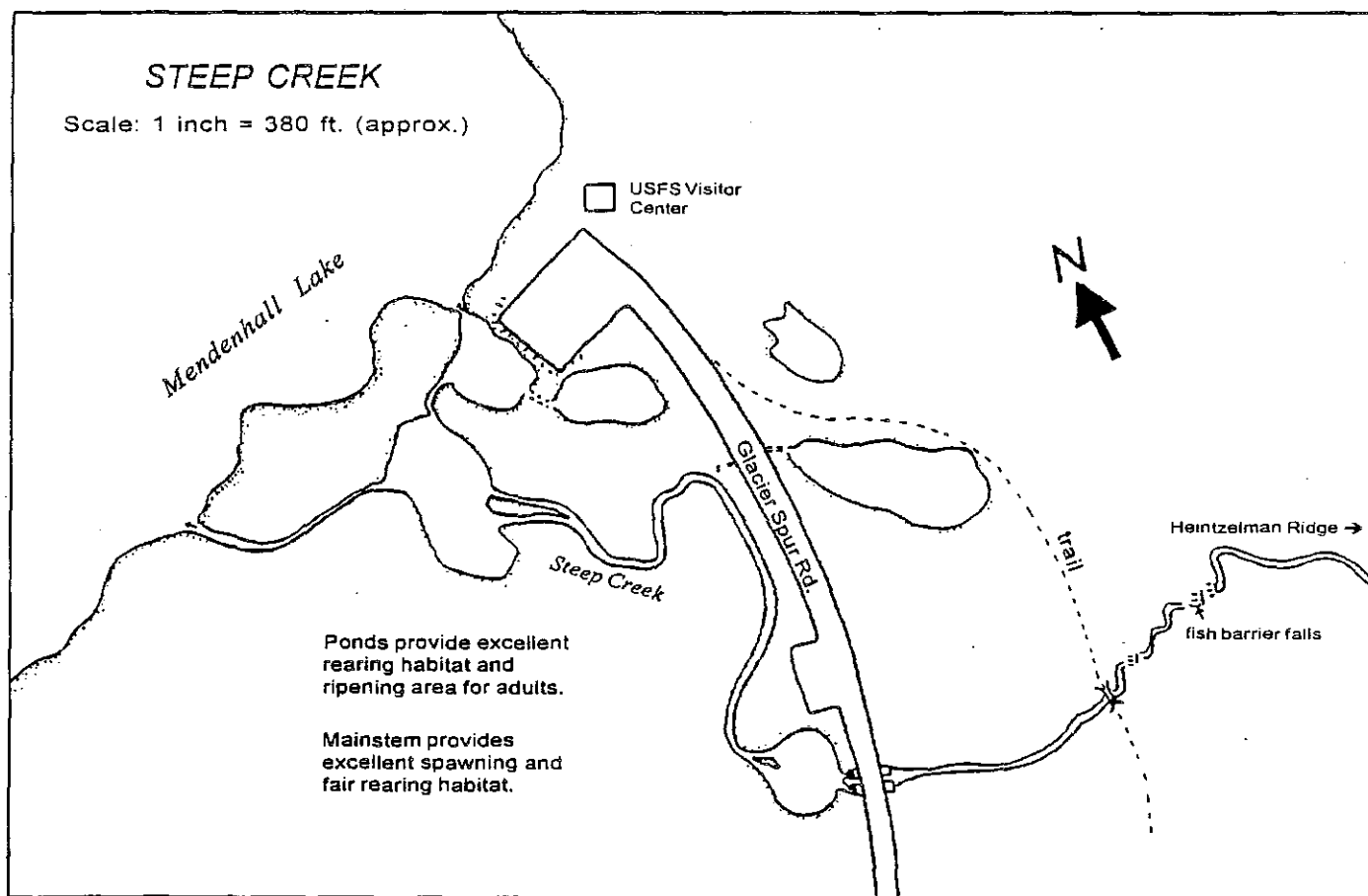


Figure 56.1 Steep Creek.

areas, Steep Creek consists almost entirely of spawning habitat. The streambed substrate is fine- to medium-sized gravel. The stream has good streamside cover and numerous undercut banks, which provide good rearing habitat. There is a 12-foot-high falls about ½ mile above the stream mouth.

Public Use

Steep Creek is located adjacent to the Mendenhall Glacier Observatory, which is visited by thousands of people each year. Steep Creek provides an excellent opportunity for 'fish viewing' and is the only place on the roadside where colorful sockeye can be observed. Steep Creek has been closed to sport fishing since 1962 to provide for fish viewing in a natural setting.

Land Ownership

Steep Creek is located entirely on U.S. Forest Service property.

Land Uses

The major impacts to fish habitat values at Steep Creek were caused by placement of two culverts under the Glacier Spur road. During extremely low water, these culverts used to pose a low water barrier to fish migration.

A small dam was constructed (with local rock) in one culvert. This diverted more water through the other culvert, thus providing enough water to allow fish passage during low stream flows.

Conclusion

Steep Creek provides the major spawning area in the Mendenhall Lake drainage. Even though the stream is closed to fishing, it receives a very high level of public use through 'fish viewing.'

Table 56.1. Summary of salmon escapement data for Steep Creek, 1960-1994 (day and month of counts appear in parentheses).

YEAR	COHO	PINK	CHUM	SOCKEYE
1960	...	200	...	410 (08/12)
1962	0	...	...	1,010 (08/07)
1964	0	...	...	1,000 (08/01)
1966	0	0	...	5,000 (07/22)
1968	0	...	...	500 (08/09)
1969	0	...	...	900 (07/27)
1970	...	...	...	857 (07/30)
1971	...	...	0	...
1972	0	...	50 (08/02)	1,700 (08/02)
1973	0	...	8 (08/08)	654 (08/08)
1974	0	...	0	600 (08/08)
1975	131 (10/29)	...	1 (08/05)	770 (08/05)
1976	361 (11/04)	...	14 (08/05)	822 (08/03)
1977	0	...	5 (07/21)	1,668 (08/09)
1978	73 (10/26)	...	0	...
1979	67 (10/15)	...	99 (07/26)	796 (07/24)
1980	147 (10/20)	...	0	1,345 (07/22)
1981	515 (10/20)	...	0	...
1982	232 (10/21)	...	2 (08/08)	1,226 (08/08)
1983	171 (10/31)	...	0	1,171 (07/26)
1984	168 (10/19)	...	0	600 (07/05)
1985	186 (10/28)	...	6 (07/31)	1,313 (07/31)
1986	247 (10/23)	...	...	1,166 (08/08)
1987	128 (10/14)	...	2 (07/31)	1,720 (07/31)
1988	155 (10/10)	...	...	520 (08/05)
1989	222 (11/01)	...	...	1,465 (08/04)
1990	185 (10/26)	...	4 (08/03)	1,499 (08/03)
1991	267 (10/21)	...	11 (08/06)	1,411 (08/06)
1992	612 (11/06)	...	11 (08/05)	1,469 (08/05)
1993	471 (10/29)	...	...	2,055 (08/24)
1994	200 (10/14)	...	...	1,292 (08/05)

Recommendations

The excellent fish habitat values of Steep Creek should be maintained. The stream has much larger spawning populations than could be reared in the stream. It would provide an excellent opportunity to do research on the im-

printing mechanism in anadromous fish.

It would be beneficial to develop a fish viewing area for the public which would be supported by stabilized banks. This would reduce further degradation of the stream banks. ■

Chapter 57

Strawberry Creek

Anadromous Stream Catalog Number:
111-50-10070-2004-3002

Location: Lat. 58°31'14" N.
Long. 134°48'04" W.
(south of Herbert River, west of Glacier Hwy. from Mile 25.5 to Herbert River Rd.)

Description

Strawberry Creek is an extensive network of small channels draining an area of approximately 3 square miles. Strawberry Creek is a tributary of the Herbert River and enters the river about ¼ mile above its confluence with the Eagle River (figure 57.1). The system generally has a very low gradient and has four main

branches draining the ridge east of Glacier Highway.

The entire system is characterized by numerous small tributaries draining the extensive meadows and muskegs through which it flows. The water in the stream is clear, with a dark brown tint.

Near its mouth, Strawberry Creek ranges from 4 to 6 feet wide. In the lower

muskeg area, the stream is over 3 feet deep in many areas. The numerous small feeder streams are 1 to 3 feet wide and up to 2½ feet deep.

Fish Species Present

Strawberry Creek has populations of coho, sockeye, and pink salmon, Dolly Varden, and cutthroat trout.

Salmon escapement data for this stream are not available; however, on October 21, 1981 one coho salmon was observed near the stream mouth.

The entire Strawberry Creek drainage was inventoried using juvenile fish traps in June 1985. Rearing salmonids were found throughout Strawberry Creek and all of its tributaries. In total, 73 traps were fished and 772 rearing coho, 271 Dolly Varden, and 9 cutthroat trout were caught.

Fish Habitat

Rearing habitat in Strawberry Creek is of excellent quality and is found

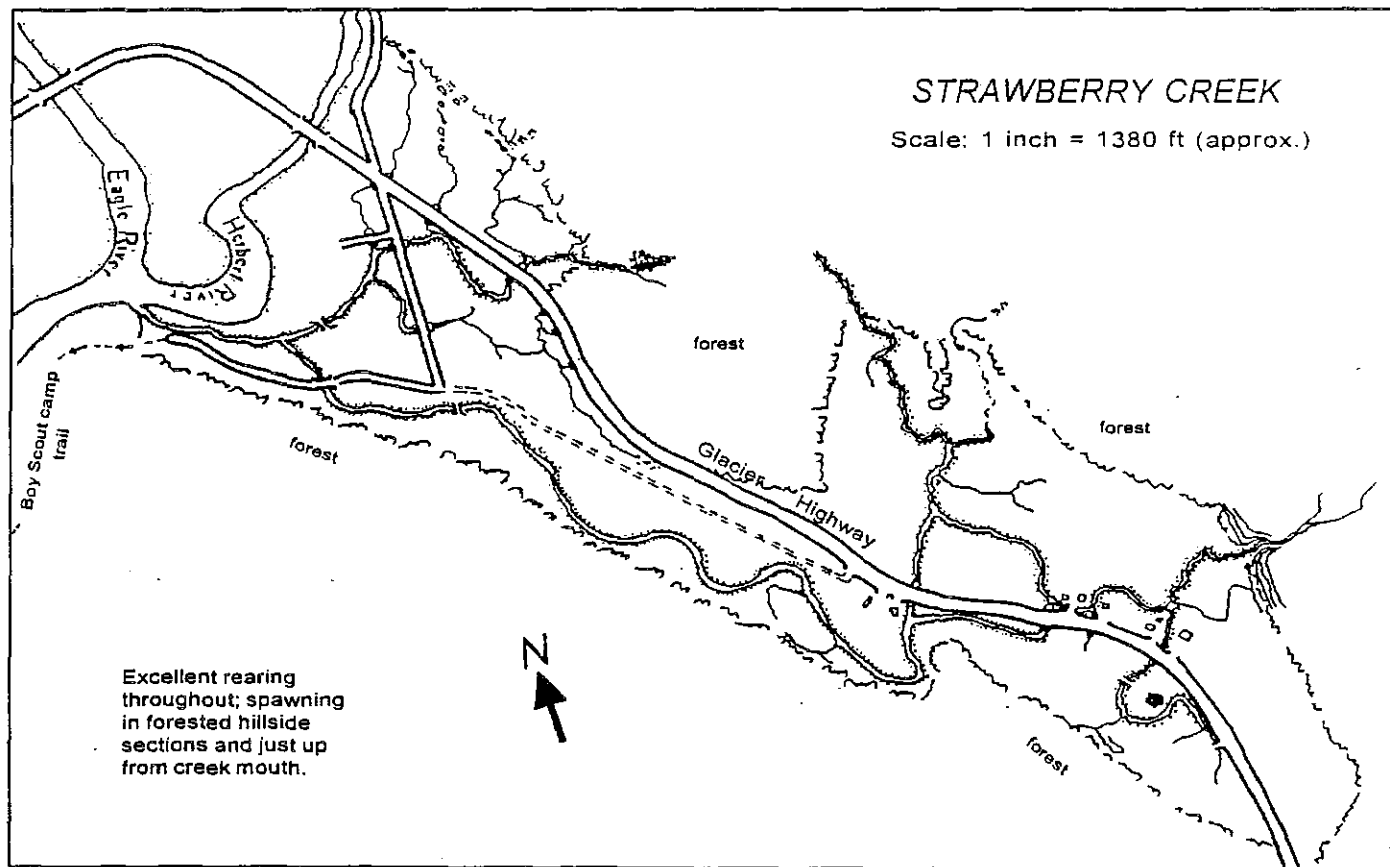


Figure 57.1 Strawberry Creek.

throughout the system. Spawning habitat is found in the forested hillside sections of the four branches. Stream gradient increases in the headwaters of the four main branches, where most spawning habitat is located.

The lower creek provides several deep pools (the remains of a larger beaver pond system) that are used by adult salmon for holding and ripening. Vegetative cover within the flats consists of overhanging grass mats and undercut banks. The forest cover is mostly spruce and hemlock, with low brushy vegetation and occasional wind-falls. During dry periods, some of the smaller tributaries may go dry. There are no barriers on the stream.

Public Use

Some sport fishing does occur at the mouth of Strawberry Creek, but the level of effort and harvest are not known.

Land Ownership

Most of the Strawberry Creek drainage is located on undeveloped, privately owned property. There is a parcel of state property near the stream mouth, and the uppermost sections of the tributaries are located on U.S. Forest Service property.

Land Uses

Strawberry Creek has been crossed by Glacier Highway in at least ten locations, and sections of some of the creek's branches have been ditched along the highway. The stream has generally recovered from the effects of road construction.

Strawberry Creek is very vulnerable to impact from development of the adjacent private properties. The adjacent properties are low and wet; they will require a lot of fill to make the land usable. The very low gradient of Straw-

berry Creek will not allow sediments to flush out of the system very well.

Conclusion

Strawberry Creek consists of an extensive network of small stream channels, all of which are very productive fish rearing habitats. Most of the stream is located on flat, privately owned property. The stream is especially vulnerable to impacts from land development.

Recommendations

Fish habitat values of this extensive drainage must be maintained through careful review of land use permit applications. Because of its length and very low gradient, the system is especially vulnerable to sedimentation from construction. Thus, it is necessary to identify all valuable stream channels and ensure adequate streamside buffers are maintained. Potential sediment pollution must also be adequately addressed. ■

Chapter 58

Switzer Creek

Anadromous Stream Catalog Number:
111-40-10070

Location: Lat. 58°21'26" N.
Long. 134°20'52" W.
(6.4 mile Glacier Highway)

Description

Switzer Creek is a relatively small stream which flows approximately 1 mile before entering Gastineau Channel east of Sunny Point (figure 58.1, opposite page). The stream ranges from 2 feet in width in its upper reaches to 15 feet at the intertidal area. Its depth ranges to 2½ feet. Switzer Creek has a moderate to low gradient, and the water is clear. The stream is spring-fed

at least in part and has one major pool approximately 50 feet wide by 100 feet long. The intertidal section of the stream is nearly 1 mile long. Streambed substrate is primarily gravel; some pools have sediment deposits.

Switzer Creek has at least four tributaries upstream from Old Glacier Highway. Two tributaries enter the mainstem in the meadow directly upstream from Old Glacier Highway, and

the other two enter the mainstem further upstream in the forested area (see figure 58.1, following page).

Fish Species Present

Switzer Creek has populations of coho, pink, and chum salmon, Dolly Varden, and cutthroat trout. The long intertidal area has populations of numerous marine species.

Juvenile and spawning fish populations in Switzer Creek have been well-documented. Juvenile trapping data are presented in table 58.1.

Salmon escapement data are presented in table 58.2. As many as 1,000 Dolly Varden, an estimated 10% of which were spawners, have been counted in Switzer Creek at one time during the salmon escapement surveys.

Coho smolt were tagged in Switzer Creek during April 13–15, 1982; in total, 340 smolt were tagged. In 1983, 6 of the tagged fish were recovered in fisheries and 2 were recovered in the escapement.

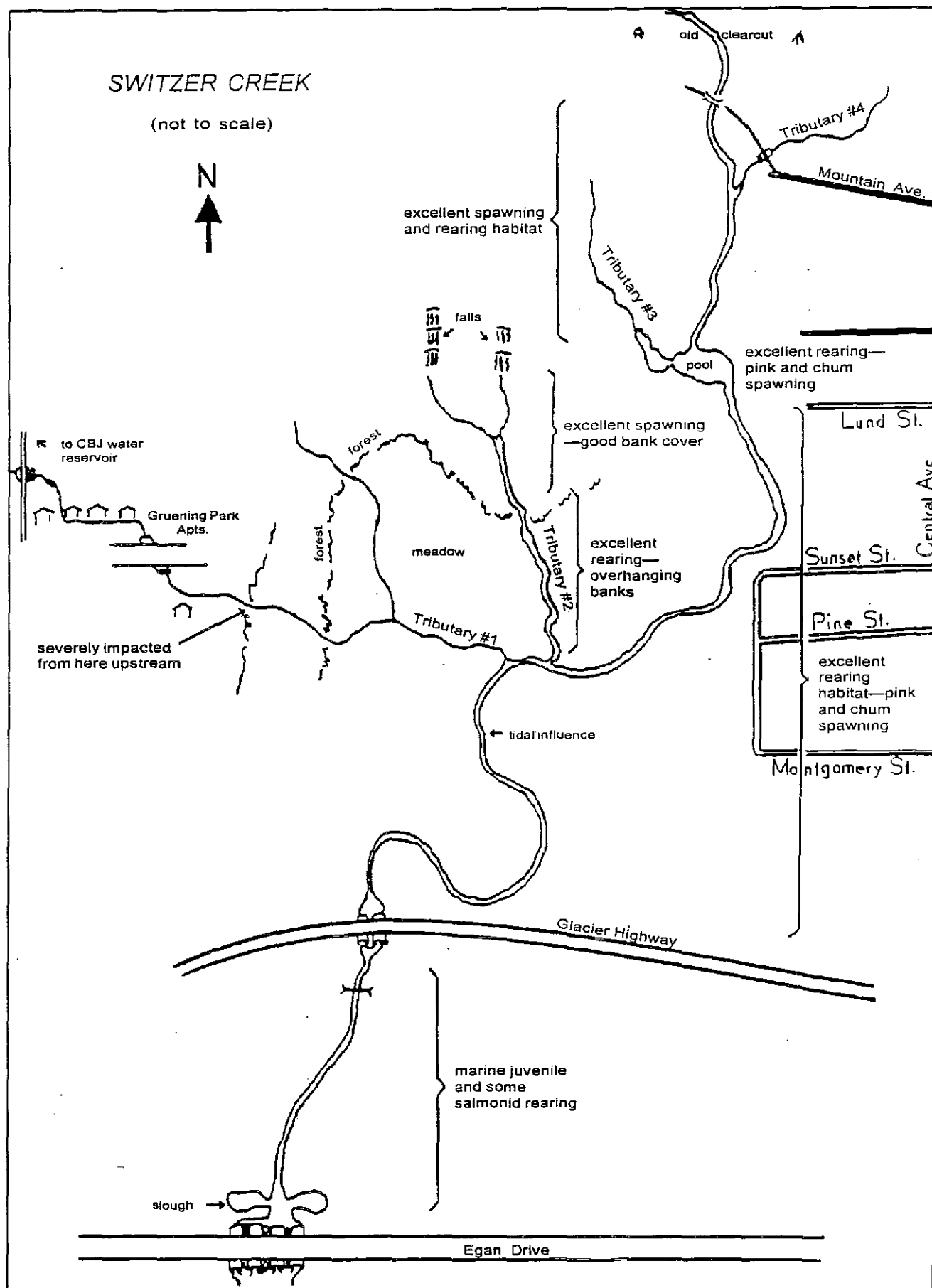


Figure 58.1 Switzer Creek.

Table 58.1. Switzer Creek juvenile fish trapping data.

AREA	DATE	NO. OF TRAPS	CUTTHROAT	DOLLY VARDEN	COHO
Mainstem ¹	7/20/70	9	1	72	27
Area 1 ²	7/25-8/7/84	19	0	236	13
Area 2 ³	7/25-8/7/84	7	1	172	47
Area 3 ⁴	7/25-8/7/84	3	0	24	120
Area 4 ⁵	7/25-8/7/84	6	0	51	51
Area 5 ⁶	7/25-8/7/84	7	2	163	38
Area 6 ⁷	7/25-8/7/84	3	0	28	31
Area 7 ⁸	7/25-8/7/84	2	0	22	34

¹ An additional 32 coho, 23 Dolly Varden, and 30 unidentified fish were observed.
² From Egan Drive upstream to Pine Street.
³ Pine Street to above Mountain Avenue (excluding Spring Pond).
⁴ Switzer Creek's Spring Pond.
⁵ Tributary #1(B).
⁶ Tributary #2.
⁷ Tributary #4.
⁸ Tributary #4.

During the trapping period, a mark and recapture population estimate indicated that a total population of 1,697 coho smolt (at the 95% confidence level) were in the stream. Undoubtedly, some smolt had already outmigrated from the stream before the estimate was made.

Of the coho smolt tagged, 51% were 1-year-olds and averaged 106.4 mm fork length. Two-year old coho smolt composed 49% of the population and averaged 120.9 mm fork length.

Using the estimated marked/unmarked ratio of smolt leaving the system and commercial port sampling factors, one could estimate that Switzer Creek contributed 69 coho salmon in 1983 to the various fisheries; 66 fish would amount to 45% harvest rate for Switzer Creek coho. This is similar to harvest rates calculated for Auke Creek, where much more data on tagged fish are available. Tag recovery data on Switzer Creek coho are presented on table 58.3.

Switzer Creek has not been stocked. However, eyed king salmon eggs were planted in the stream in 1952 and 1953. Evidently these egg plants were not successful.

Fish Habitat

Most of the Switzer Creek streambed is composed of potential spawning gravel, but some pools and low gradient areas have heavy deposits of sediment. Coho salmon spawn throughout the tributaries and mainstem upstream from Glacier Highway. Pink and chum salmon spawn throughout the intertidal area upstream to the Spring Pond (off Lund Street). The entire creek drainage has excellent overhead, streamside, and instream cover and provides excellent rearing habitat.

The spring-fed water flowing into Switzer Creek adds significantly to its fish habitat values. The stream maintains a good flow all winter long, while other non-spring-fed systems may freeze dry or experience extremely low flows.

The age classes of coho smolt and the large average size of age-1 (106.4 mm) and age-2 (120.9 mm) smolt indicate that Switzer Creek has especially productive rearing habitat. Coho smolt of this size are generally older or reared in a warm lake environment.

Public Use

Switzer Creek flows alongside a major residential area and provides an excellent area for neighborhood children to play and explore streamside ecology. A heavily used trail parallels the stream next to the residential area.

Because of its extremely high fishery values and accessibility, the Sport Fish Division uses the creek as an outdoor fisheries laboratory for 'Sea Week' activities every spring and for aquatic education purposes. The D'zantiki Heeni Middle School plans to construct an educational trail through the drainage for outdoor and aquatic education.

Switzer Creek is closed to sport fishing; however, the stream still receives some angling pressure from neighborhood children.

Land Ownership

Switzer Creek heads on USFS property and flows through private and

Table 58.3. Recoveries of tagged adult coho from Switzer Creek were made in the following areas in 1983.

LOCATION	COMM. DISTRICT	DATE	FISHERY
Outside coast	(116)	01/25/85	commercial troll
Outside coast	(116)	08/26/83	commercial troll
Outside coast	(113, 114, 116)	09/01/83	commercial troll
Stevens Passage	(109)	08/01/83	Juneau sport
Inside waters	(109)	08/17/83	commercial troll
Lower Lynn Canal	(115)	09/21/83	commercial gillnet

Table 58.2. Salmon escapement counts for Switzer Creek.

YEAR	COHO	CHUM	PINK
1960	...	...	1
1961	...	...	...
1962	...	...	...
1963	...	...	...
1964	...	...	...
1965	...	...	...
1966	...	...	...
1967	...	...	...
1968	0	...	0
1969	...	...	...
1970	...	...	...
1971	...	...	...
1972	...	...	...
1973	...	...	...
1974	45 (11/04)	30 (11/04)	0
1975	15 (10/21)	20 (10/21)	0
1976	93 (10/28)	50 (10/08)	0
1977	...	...	...
1978	168 (10/24)	100 (10/16)	0
1979	19 (10/12)	0	0
1980	7 (10/14)	40 (10/14)	0
1981	109 (10/21)	72 (10/08)	6
1982	80 (10/20)	0	0
1983	80 (10/26)	308 (10/09)	0
1984	123 (11/01)	79 (10/09)	0
1985	122 (10/29)	38 (10/29)	1 (08/07)
1986	54 (10/10)	165 (10/10)	...
1987	48 (10/07)	342 (10/07)	...
1988	51 (10/25)	19 (10/10)	...
1989	78 (10/19)	47 (10/04)	...
1990	82 (10/26)	40 (10/09)	...
1991	227 (10/28)	61 (10/03)	45 (10/03)
1992	93 (10/13)	8 (10/06)	...
1993	94 (11/03)	44 (10/06)	...
1994	198 (10/20)	272 (10/10)	485 (09/01)

municipal properties before entering Gastineau Channel in the Mendenhall Wetlands State Game Refuge.

Land Uses

Two major highways, Egan Drive and Glacier Highway, cross Switzer Creek in the intertidal area. The crossing at Glacier Highway is believed to have been a source of sediment in the stream downstream from the highway.

Two other low-use bridges cross the stream, one between Egan Drive and

Glacier Highway, and the other (an old logging road bridge) off Mountain Avenue.

A large 1960's clearcut in the headwaters of Switzer Creek is believed to have been a major source of sediment which has been deposited in downstream pools and low gradient reaches of the stream.

In 1970, Spring Pond was reported to be over 8 feet deep. The pool is presently less than half that depth. There has been some bank erosion in

areas receiving heavy use by neighborhood children. Several surface water drainage systems from adjacent residences drain into the stream. A faulty fuel oil tank in an adjacent housing development was responsible for an oil slick on the lower part of Switzer Creek in the early 1980's.

There is a bottled water company selling Switzer Creek water. The activity is properly permitted; however, expansion of the activity should be regulated so as not to impact fish habitat values of the stream.

Conclusion

Switzer Creek is a small system but an exceptional producer of fish, because of its excellent rearing habitat and spring-fed water source.

Because of the system's excellent fish production, it is a tremendous spot for nature study and use as an outdoor laboratory. Fish production of the stream has probably been impacted by sediment deposition from logging activities in its headwaters.

Recommendations

The tremendous fishery values of Switzer Creek should be maintained by critical review and response to land use permit applications. Wide buffers should be maintained between the stream and any future development. The high water quality of the stream should be maintained at all costs. The wetlands in the intertidal area between Egan Drive and Old Glacier Highway are especially vulnerable to fill and development. In this area, wide buffers along the stream should be provided, and clean rock dikes should be constructed prior to placement of any fill which could be a sediment source to the stream. The feasibility of removing sediment from the pools by using suction dredges should be determined. If possible, the pools in Switzer Creek should be cleaned. ■

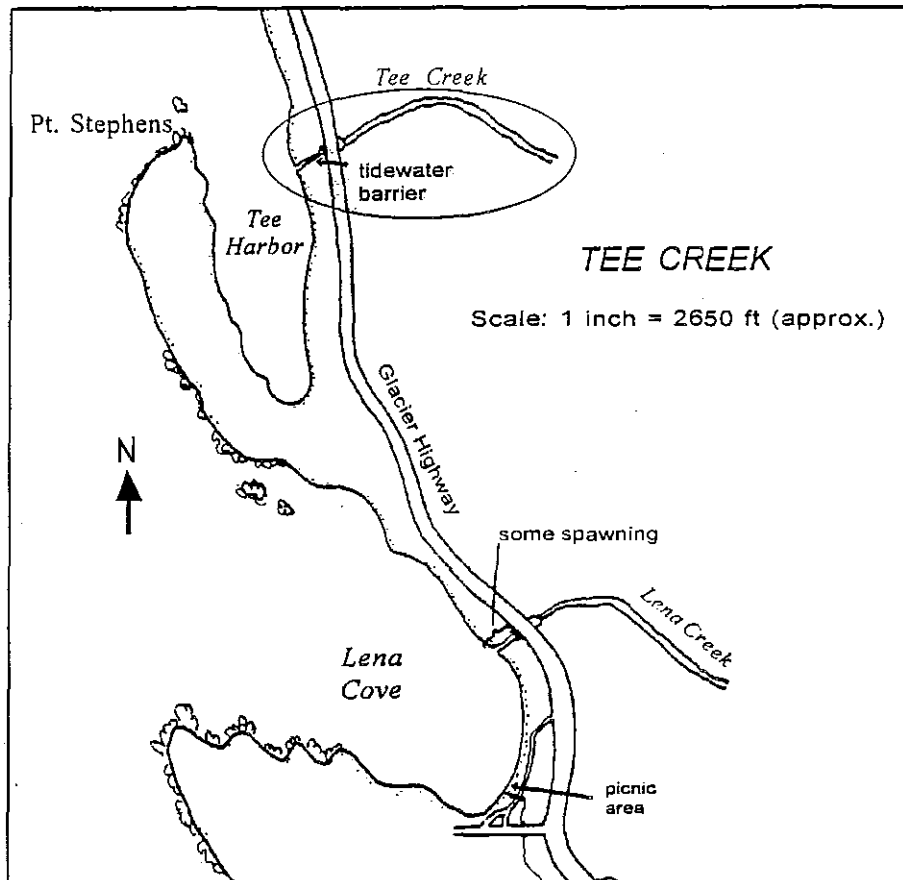


Figure 59.1 Tee Creek.

Chapter 59

Tee Creek

Anadromous Stream Catalog Number: None

Location: Lat. 58°23'45" N.
Long. 134°44'45" W.
(19.2 mile Glacier Highway)

Description

Tee Creek flows approximately 1 mile before entering salt water in Tee Harbor (figure 59.1). The stream originates in a small lake and drains an area of nearly ½ square mile.

In the lower reaches of Tee Creek, the stream gradient is high. The water in the creek is clear with a brownish tint.

Fish Species Present

Unknown. The upper portion of the stream above Glacier Highway has not been surveyed, and the stream has not been stocked.

Fish Habitat

The upstream reaches of this stream have not been surveyed. The lower reaches provide essentially no rearing

habitat and minimal, if any, intertidal spawning habitat. A 20-foot-high waterfall above the highway, and a 20-foot vertical drop below the culvert, are barriers to all fish migration.

Public Use

Tee Creek itself receives no public use; however, Tee Harbor, directly off the stream mouth, is a popular boating and fishing area.

Saltwater areas adjacent to the stream mouth are especially popular for spring chinook salmon fishing.

Land Ownership

Tee Creek is located on U.S. Forest Service property.

Land Uses

Tee Creek was undoubtedly impacted by the construction of Glacier Highway, but the habitat values of the lower stream were likely minimal before construction.

Conclusion

Tee Creek itself has minimal fishery values. The stream is ideally located in a high-use fishing area and could prove to be an excellent source of fresh water for imprinting salmon smolt to Tee Harbor.

Recommendations

The water quality of Tee Creek should be maintained, and the feasibility of using the stream as a source of fresh water for imprinting salmon smolt in Tee Harbor should be determined. ■

Chapter 60

Twin Lakes

Anadromous Stream Catalog Number: None

**Location: Lat. 58°23'45" N.
Long. 134°29' W.**

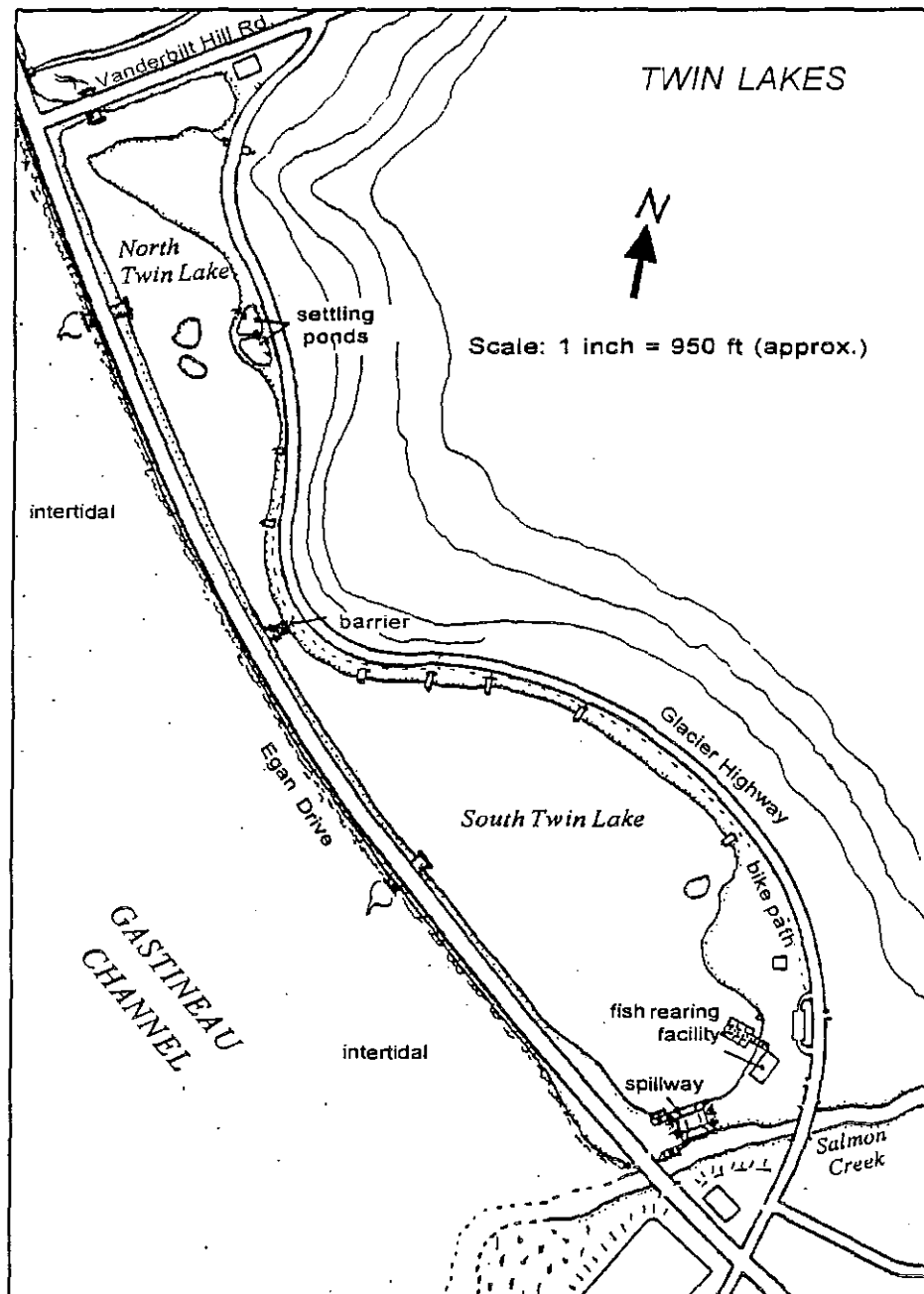


Figure 60.1 Twin Lakes.

Description

Twin Lakes are two manmade lakes formed during the construction of Egan Drive. The fill on which Egan Drive is located isolated a section of Gastineau Channel inland of the expressway. The two basins are called North and South Twin Lakes, for the two basins are nearly separated by a point of land extending from the mainland.

North Twin Lake is the smaller of the two basins and is bounded on the west end by Vanderbilt Hill Road. South Twin Lake is bounded on the east end by an earthen dike which separates it from Salmon Creek.

Both lakes have gate valves on culverts under Egan Drive through which the lakes can be drained. Each lake also has an outlet control structure containing stop-logs, which are used to regulate the water level, and screens to contain fish in the lakes. Both lakes receive fresh water from small streams that drain the upland adjacent to the lakes.

The Sport Fish Division began stocking Twin Lakes with landlocked coho salmon in 1982. In 1983, the development of a housing project uphill from North Twin Lake caused extreme turbidity and sediment deposition in the north basin. Since 1983, only South Twin Lake has been stocked.

The City and Borough of Juneau (CBJ) has developed South Twin Lake as an outdoor recreation area which receives heavy use.

From 1975 until 1984, the Northern Southeast Regional Aquaculture Association operated a salmon hatchery on Salmon Creek and reared juvenile salmon in a net pen complex in the south end of South Twin Lake. The hatchery-reared fish were released into Salmon Creek.

Fish Species Present

Twin Lakes has wild populations of coho salmon, Dolly Varden, and cut-throat trout and has been stocked with

landlocked coho and king salmon, rainbow and steelhead trout, and Dolly Varden. Table 60.1 presents a history of fish stocking in Twin Lakes.

Fish Habitat

The west, south, and east shores of Twin Lakes are bounded by rip-rap dikes and are quite steep. They are developing alder and willow vegetation which will provide overhead cover.

The inland or northern shores of both lakes are quite shallow and generally have alder and willow growing along the water line; yet there are some areas where the shorelines are rocky. Reeds and emergent vegetation also grow along the inland shores of both lakes.

The northwest end of the north basin has a flooded meadow through which two inlets flow. This area was especially productive fish habitat prior to sediment pollution of the north basin.

The north and south basins are both quite shallow, with maximum depths of 5-7 feet, except for a pocket over 20 feet deep in the south end of the south basin from which the gravel was extracted.

The north basin has been choked with emergent and floating vegetation since about 1988 during the warm summer months. The heavy sediment deposition from uphill development gave the plant growth good substrate for attachment. This vegetation is also encroaching into the north end of South Twin Lake.

Public Use

Both North and South Twin Lakes provided excellent sport fishing until the aesthetic and fish habitat values of North Twin Lake were lost through pollution in 1983. Since that time, North Twin Lake has received minimal public use, while the high use of South Twin Lake and the adjoining recreation area continues.

The recreational sport fishery in Twin Lakes was established in May 1982, when the Division of Sport Fish, in cooperation with the National Marine Fisheries Service and Northern Southeast Regional Aquaculture Association, stocked 12,000 juvenile coho salmon in the lakes. This

Table 60.1. The stocking history of Twin Lakes, 1976-1994.

DATE	SPECIES	NO.	SIZE	STOCK	HATCHERY
1976	RT	13,000	635gm/fish	Ennis	Crystal Lake
1977	RT	3,715	115gm/fish	Ennis	Crystal Lake
05/27/82	SS	7,999		Sashin Cr	Little Port Walter
08/06/83	SS	3,972		Sashin Cr	Salmon Creek
09/21/83	SS	5,285	6.8/lb	Montana Cr	Salmon Creek
06/22/84	DV	1,895	7"	Crescent Lk	Snettisham
09/05/84	SS	3,997	171mm f.l.	Berners R	Salmon Creek
05/28/85	SS	3,065	172mm f.l.	Speel Lk	Snettisham
02/07/86	SS	5,010	35.3gm	Speel Lk	Snettisham
06/17/87	SS	10,331	41.8gm	'84 Snettisham	Snettisham
10/21/87	SS	4,100	68gm	'84 Snettisham	Snettisham
05/19/88	SS	8,195	107gm	'84 Snettisham	Snettisham
1989	KS	10,000	178mm f.l.	'84 Snettisham	Snettisham
1990	KS	9,200	77.3gm/179mm	Crystal Lake	Snettisham
1991	KS	11,540	51.2gm/162mm	Crystal Lake	Snettisham
1992	KS	10,900	163mm	Crystal Lake	Snettisham
1992	SH	1,445	0.3 lb/fish	Sashin Cr	Little Port Walter
1992	SH	150	5-10 lb/fish	Sashin Cr	Little Port Walter
1992	SS	1,700	226mm	Montana Cr	DIPAC
					Gastineau
1993	KS	10,736	78.7gm/fish	Andrew Cr	Snettisham
1993	SH	1,800	450gm/fish	Sashin Cr	Little Port Walter
1993	SS	4,800	160mm	Montana Cr	DIPAC
					Gastineau
1994	KS	10,000	72.5gm/fish	Andrew Cr	Snettisham
1994	KS	3,400	214mm	Andrew Cr	DIPAC
					Gastineau

DV = Dolly Varden RT = rainbow trout
SS = landlocked coho SH = steelhead trout

enhancement project was well received by the angling public, and the lakes received immediate fishing pressure, even though the stocked fish were not considered to be a 'catchable' size.

A creel survey program was not conducted in 1982. Thus, catch estimates are based on routine observations of the Twin Lakes fishery and angler reports. Catch and release of stocked fish dominated the Twin Lakes fishery through the summer of 1982. By fall, anglers were keeping 'pan-size' fish and by the end of the ice fishery in February 1983, an estimated 5,000 to 8,000 fish had been taken from the lake.

In 1983, a creel survey (from April 4 through August 6) indicated a catch of 2,000 coho and 300 naturally produced Dolly Varden from Twin Lakes. Nearly 2,000 angler-trips were made to Twin Lakes at one time. A total of 1,500 angler-hours was expended during the

day, and an estimated 600 stocked coho and 20 Dolly Varden were harvested.

The kid's fishing derby was held on June 24, 1984; 701 anglers under 16 years old fished 801 hours and caught 450 stocked coho, 27 Dolly Varden, and 17 cutthroat trout.

Angler interest and harvest of stocked fish continued to be high throughout 1984 and 1985, but the harvest levels were not estimated.

During the winter ice fishery, it was not uncommon to find 10 to 30 anglers fishing at South Twin Lake at one time.

A 'Family Fishing Day' has been held annually at Twin Lakes during National Fishing Week since 1989. This activity is sponsored by ADF&G and the Juneau Rotary Club. It is not uncommon to see between 1,000 and 2,000 people at the lake and catches of up to 3,000 stocked fish per event.

Land Ownership

Twin Lakes are surrounded by state highways. However, the City and Borough of Juneau maintains a recreational area by South Twin Lake.

Land Uses

Twin Lakes were produced as a side benefit from highway construction. Rip-rap, which borders the lakesides, is becoming productive habitat with the growth of vegetation and deposition along the shorelines.

Sediment pollution from development uphill from North Twin Lake and pollution from residences on the north shore of the lakes pose the greatest threat to fish production. During development of the Mountainside Estates subdivision, heavy deposits of clay were washed into North Twin Lake. The

deposits are several inches deep and have provided substrate for emergent vegetation to take root in.

Heavy algae grows in North Twin Lake during the warm summer months, and that lake consequently receives little public use.

It has become obvious that the water flow through Twin Lakes is less than desirable for maintenance of a healthy lake environment. Low flows, especially during the warm summer months, are partly responsible for growth of aquatic vegetation in the lakes.

Conclusion

Twin Lakes, and especially South Twin Lake, have proven to be very attractive to the public and have provided significant opportunity for sport fishing and other forms of recreation.

Recommendations

Fish stocking of Twin Lakes should be continued. Use of a species that would grow to a larger size than landlocked coho or king salmon should be investigated. Many anglers have commented that they support the stocking of smaller fish but would like to have the chance of hooking something larger than the standard 7- to 10-inch fish.

Water quality at Twin Lakes should be maintained through a continual program to ensure that water quality is suitable for fish propagation and public use. The feasibility of capturing additional water for transfer through Twin Lakes should be investigated. Removal of the vegetation and deposited sediment in the North Basin should be investigated, and, if feasible, the developer of Mountainside Estates should assist in the project. ■

Chapter 61

Vanderbilt Creek

Anadromous Stream Catalog Number:
111-40-10125

Location: Lat. 58°20'45" N.
Long. 134°29'56" W.
(5.5 mile Egan Drive)

Description

Vanderbilt Creek drains the eastern side of the Lemon Creek Valley and western slope of Blackerby Ridge.

The stream flows approximately 1 mile, entering salt water in Gastineau Channel near the intersection of Egan Drive and Vanderbilt Hill Road (figure 61.1).

Vanderbilt Creek has three tributaries, one of which drains a small pond system. The upper reaches of the tributaries have a steep gradient, while the gradient of the mainstem is quite low. The stream has an intertidal section of about ½ mile. The water is clear, with a brownish tint. The mainstem of Vanderbilt Creek ranges from 4 to 8 feet wide and from 6 inches to 4 feet deep.

Fish Species Present

Vanderbilt Creek has populations of Dolly Varden and coho, pink, and chum salmon. The stream has not been stocked. Even though the fishery values of Vanderbilt Creek have been impacted by land use activities, it still produces good numbers of coho salmon and Dolly Varden.

Juvenile trapping data for Vanderbilt Creek appear in table 61.1, and salmon escapement counts are presented in table 61.2.

Fish Habitat

Vanderbilt Creek originally provided an excellent combination of pools and riffles with good streamside and instream cover. Much of the spawning habitat and rearing pools have been impacted by large quantities of sediment washed into the stream from a large gravel pit in the stream's headwaters.

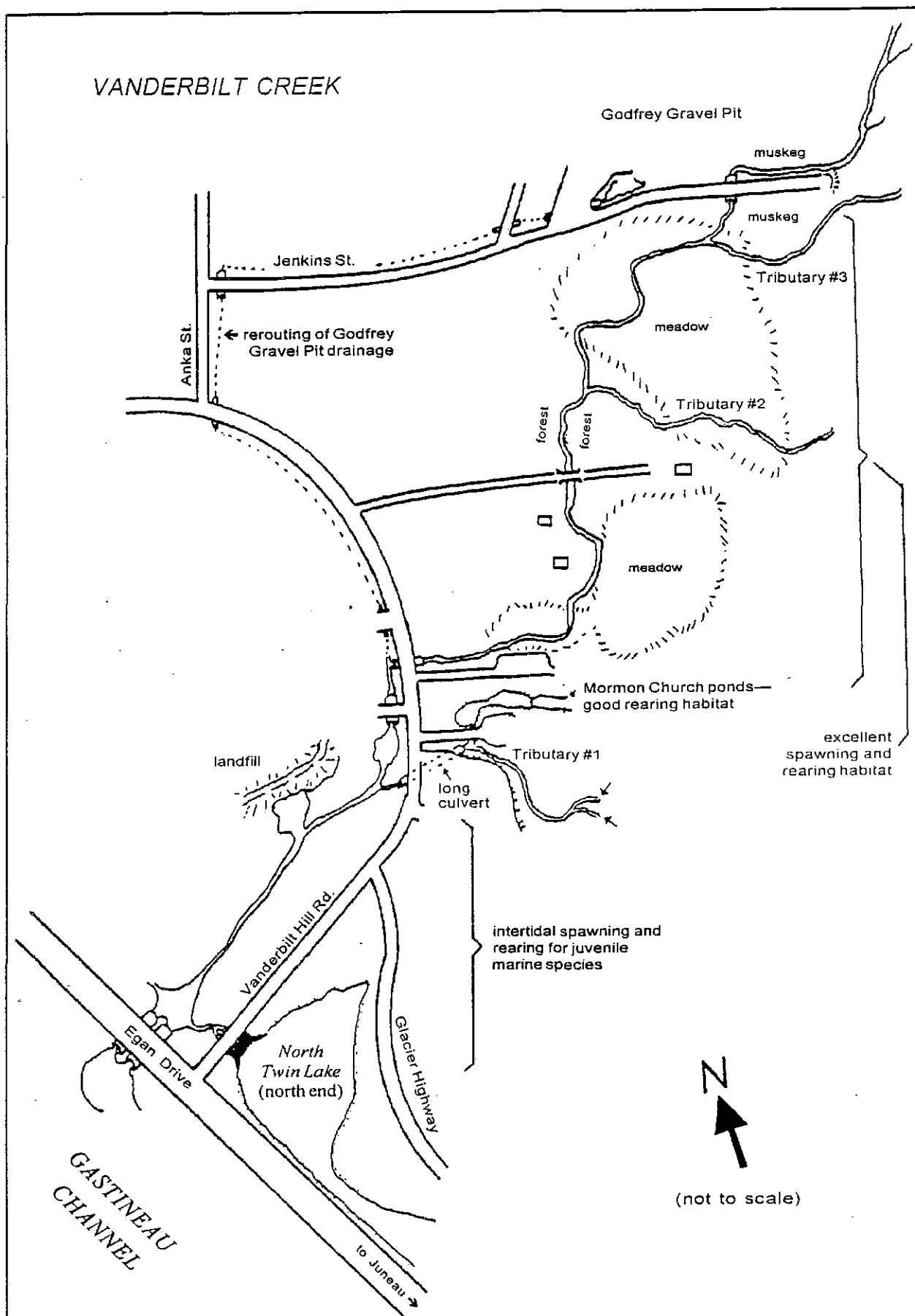


Figure 61.1 Vanderbilt Creek.

Table 61.1. Juvenile fish trapping data for Vanderbilt Creek.

AREA ¹	DATE	NO. OF DOLLY			COHO
		TRAPS	VARDEN		
?	8/08/70	4	22		7
1	8/15/84	10	163		54
2	8/13/84	3	2		6

¹ Area 1—Glacier Highway to the Godfrey gravel pit access road (many additional juvenile coho and Dolly Varden were observed—2 of the 10 traps had a fish gilled in the trap entrance, rendering it ineffective).
Area 2—Mormon Church Pond.

Presently, pink and chum salmon spawn in the intertidal area and upstream to just above Glacier Highway, and coho salmon spawn throughout the drainage. Streamside and instream woody cover is excellent. There are no barriers on Vanderbilt Creek.

Public Use

Vanderbilt Creek receives little, if any, public use. The Lemon Creek trail (maintained by the U.S. Forest Service) parallels the stream and crosses the upper tributaries, which run off Blackerby Ridge.

Land Ownership

Vanderbilt Creek heads on U.S. Forest Service property and flows through state and private land.

Land Uses

The fish habitat values of Vanderbilt Creek have been significantly degraded through the deposition of sediment from a large gravel pit and development of an industrial complex in the stream's headwaters. Drainage from the pit originally drained directly into the mainstem; however, the polluted drainage was tempo-rarily directed into a ditch alongside Jenkins Street and bypassed the most productive section of the stream.

Sedimented drainage re-entered Vanderbilt Creek directly below Old Glacier Highway.

A section of the stream downstream from Glacier Highway was re-established in the 1970's after being impacted by streamside commercial development.

Vanderbilt Creek is crossed by Egan Drive, Glacier Highway, and several private driveways.

Conclusion

Vanderbilt Creek is a small stream with potentially excellent fish-rearing qualities. The stream has been significantly impacted by adverse land uses, yet continues to pro-

duce good numbers of coho salmon and Dolly Varden.

The fish habitat values of this small but productive stream continue to be degraded to some degree by sediment contamination from upper areas of the drainage.

Recommendations

All drainage from the gravel pit and industrial area should be required to meet water quality standards prior to entering the creek.

The feasibility of removing sediment from the pools in lower Vanderbilt Creek should be determined. ■

Table 61.2. Salmon escapement counts for Vanderbilt Creek, 1978-1992 (day and month of count in parentheses).

YEAR	COHO	PINK	CHUM
1978	4 (11/08)	...	...
1979	...	...	...
1980	...	...	...
1981	4 (10/23)	...	...
1982	33 (10/21)	...	...
1983	11 (11/15)	2 (10/16)	...
1984	50 (10/27)	...	1 (08/06)
1985	15 (10/24)	...	...
1986	7 (10/28)	...	...
1987	...	...	...
1988	6 (10/10)	...	...
1989	11 (10/26)	...	...
1990	...	941 (08/28)	...
1991	23 (10/25)	...	...
1992	4 (10/18)	...	...

Chapter 62

Wadleigh Creek

Anadromous Stream Catalog Number:
11-50-10370

Location: Lat. 58°33'50" N.
Long. 134°39'18" W.
(12.8 mile Glacier Highway)

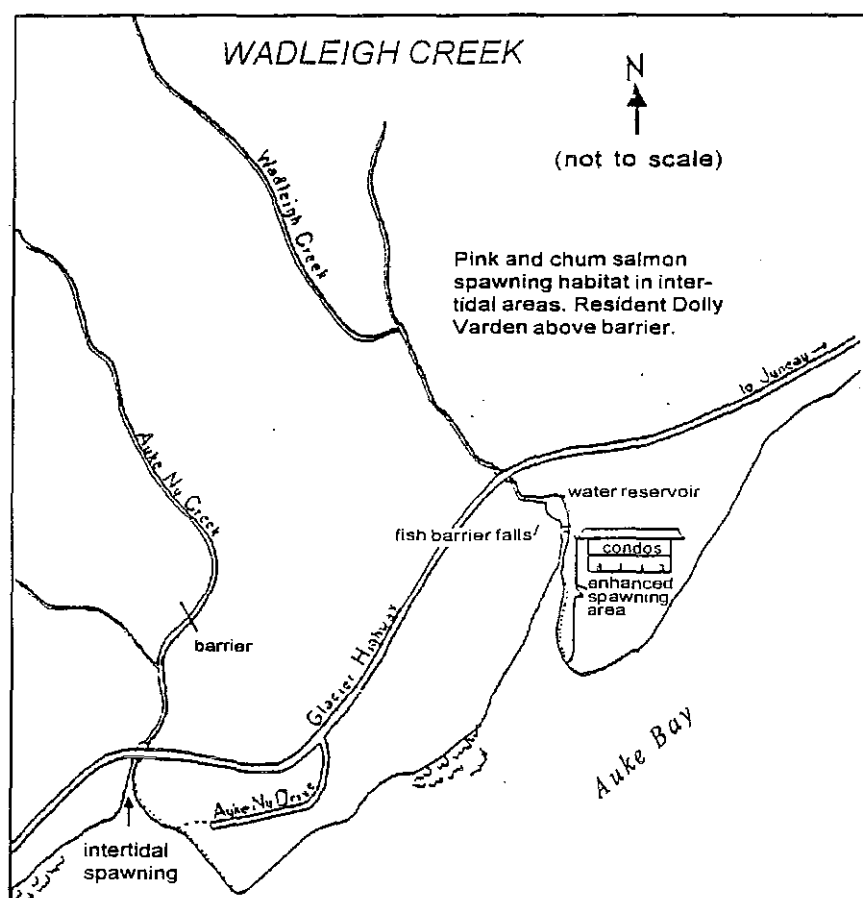


Figure 62.1 Wadleigh Creek.

Description

Wadleigh Creek runs in a southerly direction for about 2 miles before entering salt water on the west side of Auke Bay (figure 62.1). The stream drains a watershed of approximately 1 square mile. Stream gradient is fairly steep in the upper reaches, and a barrier to fish migration is located at the head of tidewater. The water is clear with a brownish tint during high flows.

The stream above Glacier Highway varies from 3 to 6 feet wide, with depths of up to 2 feet. Downstream from the highway, the stream is 10 to 20 feet wide with depths up to 2 feet.

Fish Species

Wadleigh Creek has populations of Dolly Varden and pink and chum salmon. Eastern brook trout may be present upstream from the barrier.

Two Dolly Varden were trapped February 9, 1983, in four minnow traps upstream from the barrier, and two Dolly Varden were trapped in three traps below the barrier.

The creek was stocked with 500 eastern brook trout on June 20, 1953. It is not known if they are presently found in the system.

Salmon escapement data for Wadleigh Creek is presented in table 62.1.

Fish Habitat

The intertidal area of Wadleigh Creek originally provided fair to good spawning habitat for pink and chum salmon. In 1983, a water reservoir for a streamside condominium complex was constructed near the site of a barrier falls. As mitigation for constructing the dam, the developers were required to enhance the spawning area downstream from the dam.

The enhanced area is located upstream from the best natural spawning substrate and it effectively increased the spawning area in the stream. The enhanced area has been scoured by heavy stream flows, but the area still provides better than original spawning habitat.

Upstream from Glacier Highway, Wadleigh Creek has quite a steep gradient and many pools that provide rearing habitat for resident Dolly Varden. Streamside

Table 62.1. Salmon escapement counts for Wadleigh Creek, 1968-1994 (month and day of count in parentheses).

YEAR	PINK	CHUM
1968	25 (09/01)	...
1980	444 (09/04)	0
1982	800 (09/19)	0
1983	1,653 (08/06)	11 (08/03)
1984	400 (08/20)	80 (08/10)
1985	2,000 (08/07)	70 (08/08)
1986	350 (08/25)	30 (08/25)
1887	1,222 (08/20)	...
1988	1,121 (08/07)	28 (08/17)
1989	...	...
1990	2,450 (08/28)	4 (08/28)
1991	210 (08/09)	127 (08/09)
1992	1,058 (08/10)	...
1993	50 (08/16)	33 (08/10)
1994	336 (08/03)	1,301 (08/03)

vegetation and abundant instream woody debris provide excellent cover. Numerous small falls above Glacier Hwy. would be barriers to upstream migration.

Public Use

Wadleigh Creek has been closed to salmon fishing since 1962 but does receive some angling pressure for Dolly Varden. The creek mouth (in Auke Bay) is a good location for pink salmon and Dolly Varden fishing.

Land Ownership

Wadleigh Creek heads on USFS land, and the downstream reaches flow through private property.

Land Uses

Wadleigh Creek was impacted by the Glacier Highway crossing. A drop of nearly 2 feet at the culvert outfall could be a barrier to upstream migration at lower water levels.

The dam described under Fish Habitat precludes access to the upper anadromous reaches; however, the enhanced spawning area downstream from the dam provides more spawning area than was lost. Also, a minimum stream flow through the dam is required during low flow periods. Now that the condominium complex is on city water, the dam should be removed.

Wadleigh Creek is known to have several water withdrawal permits on file.

Conclusion

Wadleigh Creek is a small stream that originally had fairly low fishery values. The stream provided an example of how fishery values could be enhanced through mitigation for development of adjacent areas.

Recommendations

The enhanced spawning area in Wadleigh Creek should be re-established. Heavy stream flows have washed out portions of the spawning substrate.

Water quality of the stream should be maintained through critical review of land use permit applications. ■

Chapter 63

West Creek (unofficial name)

Anadromous Steam Catalog Number:
111-40-10050

Location: Lat. 58°21'27" N.
Long. 134°31'21"W.
(6.7 mile Glacier Highway)

Description

This small stream flows in a southerly direction off the south side of Thunder Mountain for approximately 1 mile before entering Gastineau Channel just east of Sunny Point (figure 63.1). The westernmost of two small streams flowing through Switzer Creek trailer court, West Creek drains a watershed of approximately 1 square mile and averages 4 feet in width and 6 inches in depth.

Fish Species Present

West Creek has populations of pink and coho salmon and Dolly Varden. Four juvenile fish traps fished in the stream on August 17, 1970 caught 5 Dolly Varden, and an additional 21 juvenile salmonids were observed in the stream.

In August 1985, 30 adult pink salmon were observed in the stream directly downstream from Glacier Highway. On August 30, 1994, 471 pink salmon and 75 chum salmon were counted in West Creek. In the past, adult coho have been observed in the stream during fall, but escapement data are not available.

West Creek has not been stocked.

Fish Habitat

Pink salmon are known to spawn in the intertidal areas and above to Glacier Highway. The stream flows quite fast, with few protected areas

above the highway. Thus, its overall rearing potential is low.

The long intertidal area provides an excellent nursery for juvenile marine species. There are no known fish barriers on the stream, except a 5-foot-high falls $\frac{3}{4}$ mile upstream, which probably acts as an upstream barrier.

Public Use

West Creek flows through the largest trailer court in the Juneau area. The stream provides a good area for neighborhood children to play and explore stream habitats. West Creek is not known to provide any sport fishing opportunity.

Land Ownership

West Creek heads on U.S. Forest Service property, then flows through private property, finally crossing the Mendenhall Wetland State Game Refuge (downstream from Egan Drive).

Land Uses

West Creek has been impacted by two major road crossings, Egan Drive and Glacier Highway. The stream has recovered from the impacts of these crossings.

Private development and streets in the trailer court adjacent to the stream could be impacting the water quality and fish habitat values. Fish populations are harassed by neighborhood children.

A water reservoir for the trailer park was in place for several years in the stream's headwaters. Heavy accumulations of gravel built up behind the dam, and when the dam was removed, the heavy deposits of gravel washed downstream and plugged culverts under Old Glacier Highway. The Division of Highways have been removing the gravel from the culverts after every

high water, and also from a good pool downstream from Old Glacier Highway. Continued gravel removal has impacted fish rearing in the lower section of the stream.

Ideally, the gravel should be removed from the entire system so the remaining stream habitat could stabilize.

Conclusions

West Creek is a small creek with low fishery values. The stream is very accessible and provides a neighborhood opportunity for stream and nature study. Fish habitat values of the stream could likely be improved through enhancement.

Recommendations

The water quality of the stream and fish habitat values should be maintained through critical review of land use permit applications. The feasibility of implementing small fish habitat improvements should be determined. Rather than continually removing material from the lower stream, the material should be stabilized in the stream so it would become productive habitat. ■

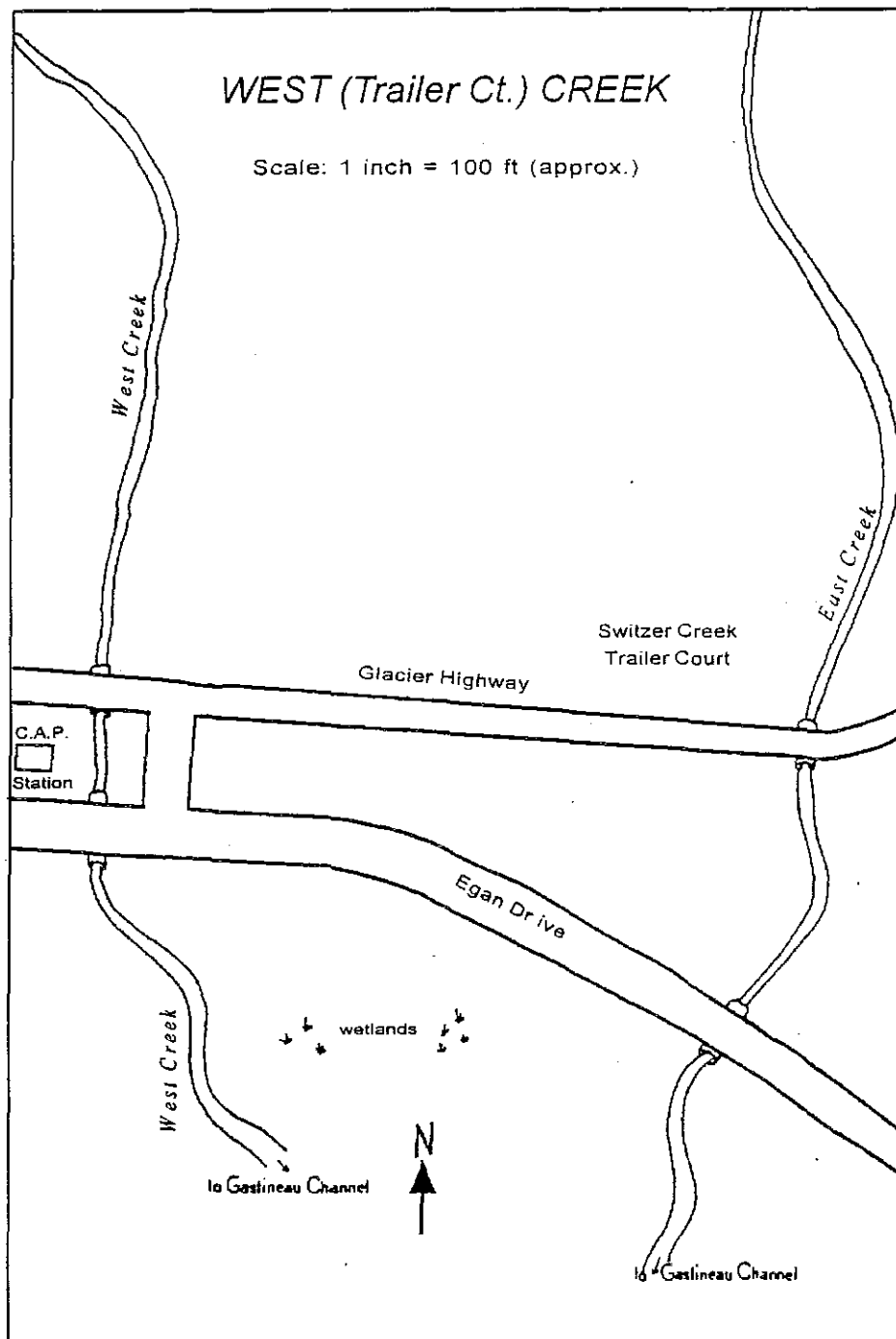


Figure 63.1 West Creek.

Chapter 64

Windfall Lake

Anadromous Stream Catalog Number:

111-50-10070-2004-3006-0016

Location: Lat. 58°30'26" N.

Long. 134°43'32" W.

(18 miles NW of Juneau)

Description

The Windfall Lake system drains an area of approximately 1 square mile south of Herbert River (figure 64.1). Windfall Lake is connected to Herbert River by an outlet approximately ½ mile long. The outlet has a low gradient and ranges from 20 to 40 feet wide, with numerous riffles and pools up to 6 feet deep. Windfall

Lake is 0.8 mile in length, with a surface area of about 300 acres. Its maximum depth is about 35 feet. A large muskeg area containing numerous grass mats and small water channels and several beaver dams are located at the south end of the lake. The water in the lake is clear, with a brownish tint. The lake shore is lined with lily pads, arrowhead, horsetail, and other aquatic vegetation.

Windfall Lake has one major inlet: the Windfall Creek-Slate Creek system, which enters the south end of Windfall Lake.

Windfall Creek drains north from the same valley from which Montana Creek originates. They flow in opposite directions. Windfall Creek is approximately 3 miles long. The upper reaches of the stream have a steep gradient, and the lower reaches have a moderate to low gradient.

Fish Species Present

The Windfall Lake system has populations of coho, pink, chum, and sockeye salmon, cutthroat and steelhead trout, and Dolly Varden.

Rearing fish populations in the Windfall Lake system were well-documented in a trapping study conducted in the system from July 30 to August 2, 1973. The findings of the study are summarized in table 64.1 below, and data on individual trap catches by area.

Table 64.1. Summary of Windfall Lake rearing coho salmon survey conducted from July 30 through August 2, 1973. Numbers in parentheses indicate mean catch per trap.

LOCATION	NO. OF TRAPS	COHO SALMON			DOLLY VARDEN	CUTTHROAT TROUT	OTHER
		AGE-0	AGE-I	AGE-II			
Windfall Lake outlet	9	140 (15.6)	117 (13.0)	6 (0.7)	18 (2.0)	5 (0.6)	stickleback, cottids
Subtotal - coho salmon		263 (29.2)					
Windfall Lake	20	14 (7.4)	210 (10.5)	7 (0.4)	1 (0.0+)	1 (0.0+)	stickleback, 1 red salmon (age-0)
Subtotal - coho salmon		366 (18.3)					
Windfall Lake inlet stream	3	15 (9.5)	26 (8.7)	0	50 (16.7)	0	...
Subtotal - coho salmon		41 (13.7)					
TOTALS	32	304 (9.5)	353 (11.0)	13 (0.4)	69 (2.2)	6 (0.2)	1 red salmon (age-0)
Total coho salmon - all ages combined		670 (20.9)					
TOTAL - all species combined (SS, RS, DV, CT)		746 (23.3)					

soak times, temperature, and fish size are on file in the Sport Fish Division area management office.

A sockeye salmon weir was operated on the outlet of Windfall lake from June 12, 1989 through August 6, 1989, and 3,864 adult sockeye were counted through the weir. Anglers caught an additional 1,302 sockeye, of which 803 were retained.

Fish Habitat

The bottom substrate of Windfall Creek consists of sand and gravel. Water temperature was 8°C at the time of the survey. About 180 m upstream from the lake, the stream narrows to 2 m wide and 2 m deep. About 50 large Dolly Varden spawners (1 to 2.5 kg) were observed in this part of the stream.

Catches of juvenile coho salmon in the lake outlet were exceptional, averaging 29.2 fish per trap, and excellent in the lake, averaging 13.7 per trap (table 64.1).

The overall mean catch of 20.0 coho salmon juveniles per trap for lake, inlet, and outlet combined was excellent. The overall mean trap catch for all salmonids combined (coho salmon, Dolly Varden, cutthroat trout, and sockeye salmon) was 23.3 fish per trap.

In the 32 traps set in Herbert River, 670 coho salmon juveniles, 69 Dolly Varden, 6 cutthroat trout, and 1 juvenile sockeye salmon were caught. The age composition of the 670 juvenile coho salmon was calculated by length groupings from scale samples and lengths from 94 fish. The age class composition of the total sample was estimated to be 45.4% age-0, 52.7% age-I, and 1.9% age-II.

The percentage of coho salmon in each age class and range in lengths differed among samples taken from the outlet, the inlet, and the lake.

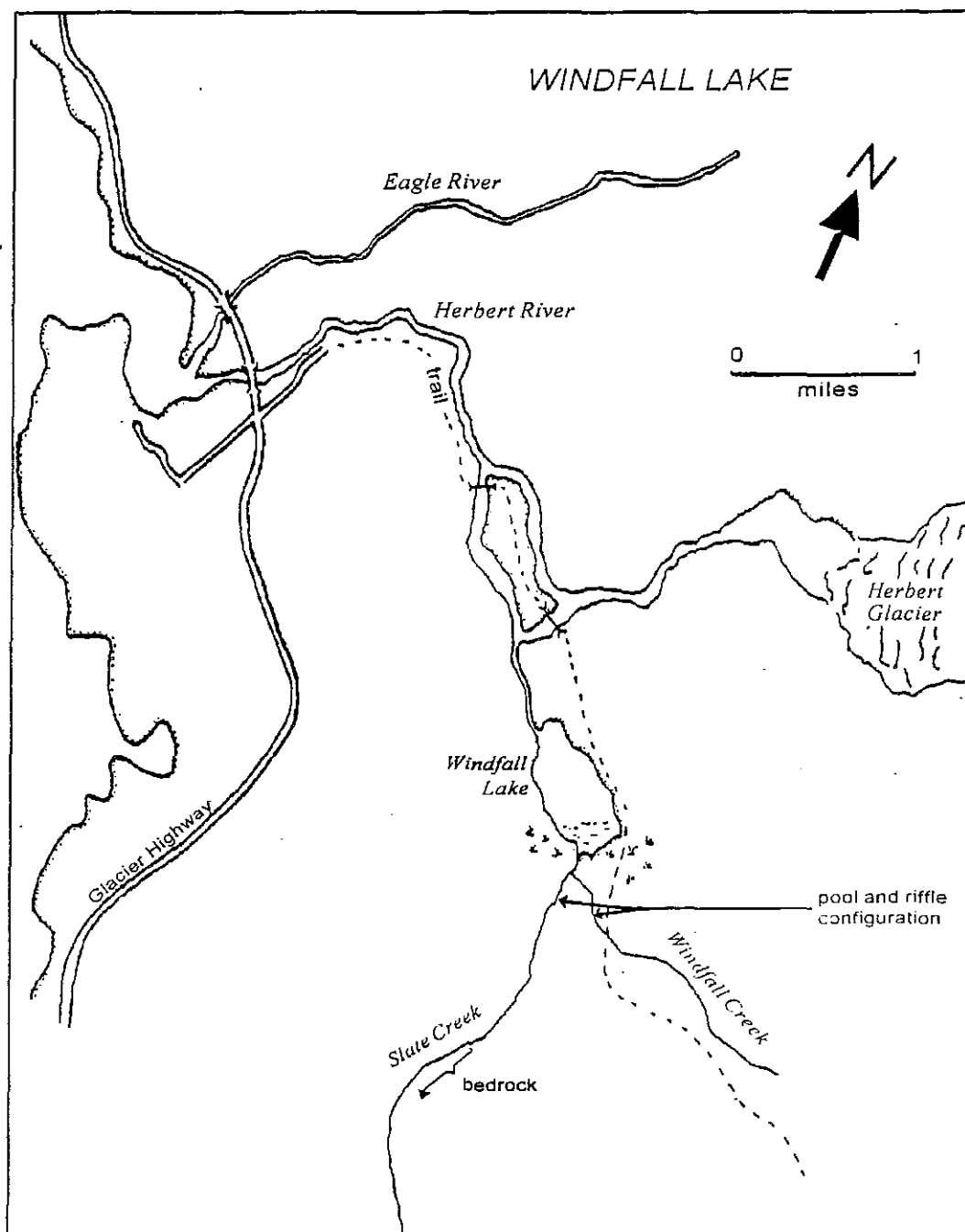


Figure 64.1 Windfall Lake.

In general, age-0 and age-1 fish were smaller in the colder inlet stream and larger in the lake and outlet stream. Age-II fish were only present in the lake and outlet stream.

Based on juvenile fish trap catches and an examination of the habitat, the Windfall Lake system would be classified as a very important coho salmon producer. It is also important for sockeye salmon, Dolly Varden, and cutthroat trout. Further surveys for spawning coho salmon should be conducted to learn the total number and distribution of spawners and their run timing.

Additionally, pink and chum salmon are known to spawn in the system. On May 14, 1984 four steelhead were

Table 64.2. Salmon escapement survey data for Windfall Lake.

YEAR	COHO	SOCKEYE	CHUM
1968	...	2,000 (07/14)	...
1973	...	1,285	...
1978	45 (11/12)	0	...
1979	0	1,650 (07/26)	...
1980	0	1,518 (07/25)	...
1982	227 (11/01)	0	...
1983	28 (11/01)	239 (07/29)	...
1984	19 (10/28)	0	...
1985	...	...	...
1986	...	1,114 (08/07)	...
1987	...	1,724 (08/10)	...
1988	...	925 (08/12)	4 (07/08)
1989	...	1,766 (08/10)	...
1990	29 (10/17)	1,433 (08/13)	...
1991	...	871 (08/15)	...
1992	29 (10/17)	330 (08/11)	...
1993	...	475 (08/25)	...
1994	...	345 (07/28)	...

Table 64.3. Steelhead survey data for Windfall Lake outlet.

YEAR	STEELHEAD OBSERVED	STEELHEAD REDDS
1989	1 (5/19)	11 (5/19)
1990	0 (6/12)	12 (6/12)
1991	0 (6/26)	15 (6/26)
1992	4 (5/12)	26 (5/18)
1993	7 (5/07)	14 (5/06)
1994	4 (4/26, 5/26)	28 (5/26)

observed in the outlet of Windfall Lake. A summary of salmon escapement data for Windfall Lake is presented in table 64.2. Steelhead survey data is presented in table 64.3

Windfall Lake is also an important overwintering area for adult anadromous Dolly Varden and for cutthroat trout.

An extensive beaver colony in the inlet to Windfall Lake has several dams which have proven difficult or impossible for adult sockeye to cross in order to get to Slate Creek, the main spawning tributary. The dams pose an especially serious problem during low water periods.

Public Use

Windfall Lake has been a favorite place for sport fishing, camping, and hiking for many years. The lake is accessed by float planes and by a trail that heads at the end of the Herbert River Road.

Creel survey data are not available for Windfall Lake because of the time required to access the lake. In 1989, an onsite creel census was conducted at the sockeye salmon fishery at the outlet of Windfall Lake. From June 12 through August 6, 1989 anglers expended 2,694 hours of angling in catching 1,302 sockeye salmon, of which 803 were retained.

It is estimated that more than 1,000 sockeye salmon and several hundred coho salmon, as well as Dolly Varden and cutthroat trout, are taken from the Windfall Lake system annually. The sockeye fishery became so popular in both 1990 and 1991 that the fishery was restricted or closed by emergency order in-season, to provide some protection to the small run of sockeye. The sockeye salmon run remains depressed at the time of this report, and the sport fishery will likely be closed for several seasons to provide protection to returning spawners.

Land Ownership

The Windfall Lake system is located in the Tongass National Forest.

Land Uses

The Windfall Lake system is in essentially natural condition except for a small amount of placer mining activity on Slate Creek. The system would be vulnerable to continued mining activities.

Conclusion

The Windfall Lake system is one of the most productive fish producers in the Juneau area. The system is accessible to the public, receives a high level of use, and remains in a natural condition.

Recommendations

Windfall Lake's excellent fish habitat and high level of public use should be maintained and protected. The lake provides a major recreational opportunity in a natural setting. Because of the lake's tremendous fish production and recreational opportunity, it should be placed in a land use category that will maintain its current values. ■